AMERICA'S LARGEST TEXTILE MONTHLY

COTTON

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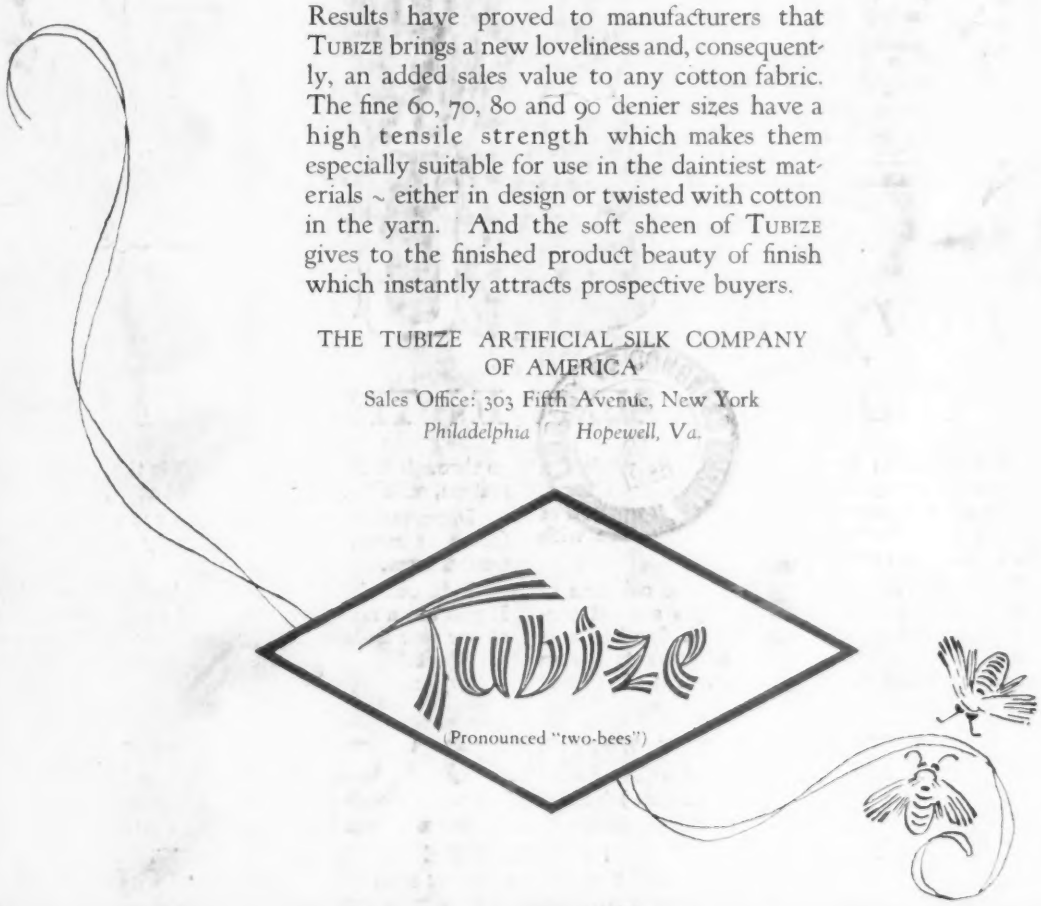

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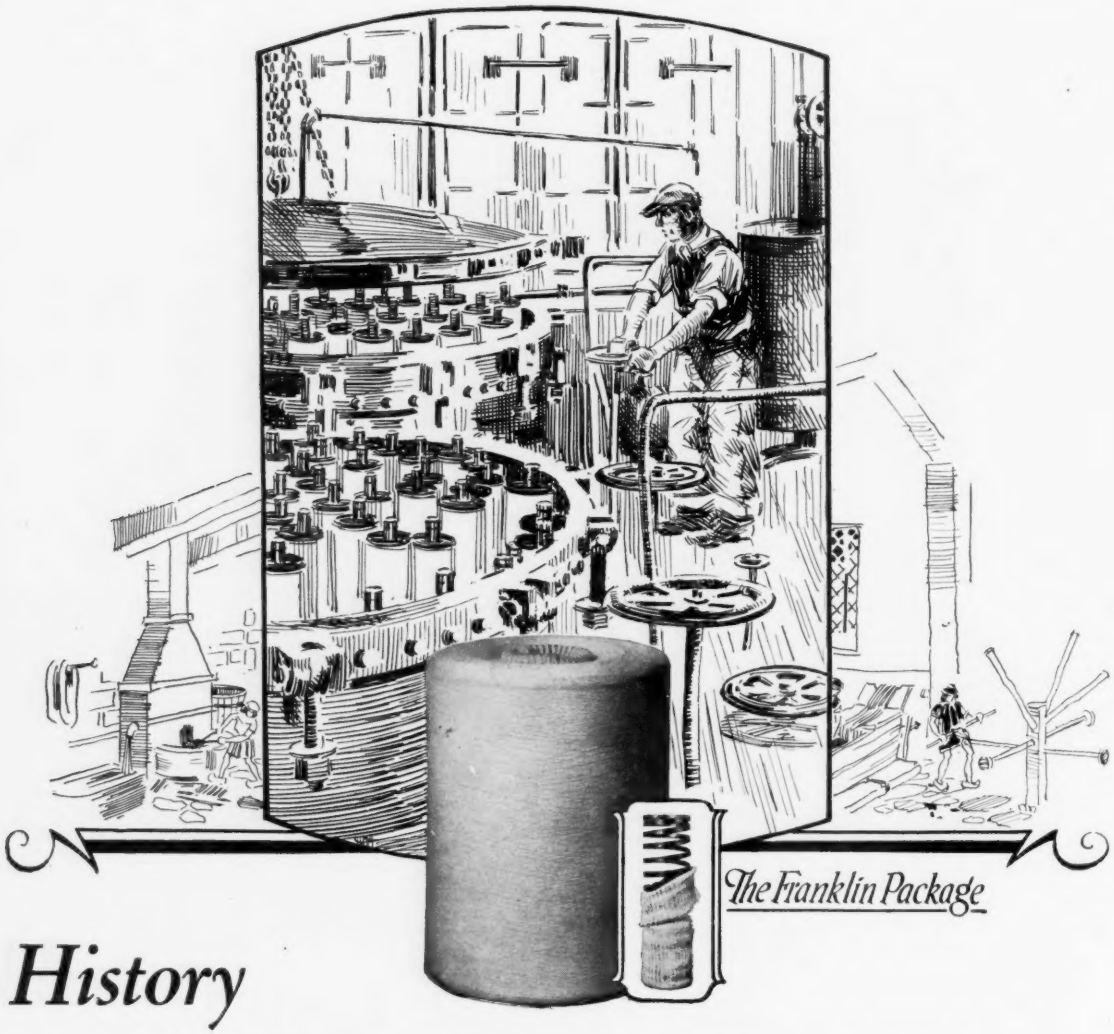

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COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor. **R. W. PHILIP, Associate Editor.**

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When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

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With the Publishers—

"Underprivileged"—A New Term

"Underprivileged children."

It was a new term to the mill man, who heard it at a meeting of the Kiwanis Club, when plans were being discussed to help youngsters who needed help. It is a better term than "poor and needy." They may be well off in some respects, such as health, and yet lack opportunities for education. "Underprivileged" states it.

There are many textile mill men who are "underprivileged" and yet they could hardly be placed in a class needing charity.

They merely lack the privilege of being so that they can visit other successful mills more frequently and get the "education" they need in diversified methods and equipment.

But distance and time often makes this impossible.

Here is where COTTON proves itself of real help to the "underprivileged" textile men. Its editors and contributors are constantly enabling the men at the "underprivileged" mill to visit other leading plants by proxy. The writers in COTTON tell of the most successful practices in mills that have proved to be profitably operated—telling these things in such a manner that any other mill man is enabled to check them up against his own methods.

However, there is one thing in which there is no such thing as an "underprivileged mill." That is in the opportunities to study equipment and supplies through the advertising pages of COTTON. Here all have equal chances. The smallest mill may not yet be ready to use all that is pictured and described in the announcements, but it will be a better mill man who makes it a policy to study thoroughly the advertisements in each issue.

Business men's organizations, like the Kiwanis Club, have realized that what most children need is opportunity. So do many operating executives need opportunity, and COTTON provides a great many opportunities for such men. That they appreciate it is evident from the comments they make in letters to the publishers when they write to renew their subscription for another year.

The assistant agent of a large Connecticut mill says: "I have come to realize that the day is a long way off when I will not be able to get at least one good idea by reading an issue of COTTON."

The superintendent of a mill making an internationally known brand of hose says: "Your 'Knitting Kinks' section is the best yet, and contributor 'Rymi' I consider worth the price of COTTON for five years.' "

The superintendent of an underwear mill says: "I enjoy reading COTTON and find more valuable information in it than in any other textile magazine printed."

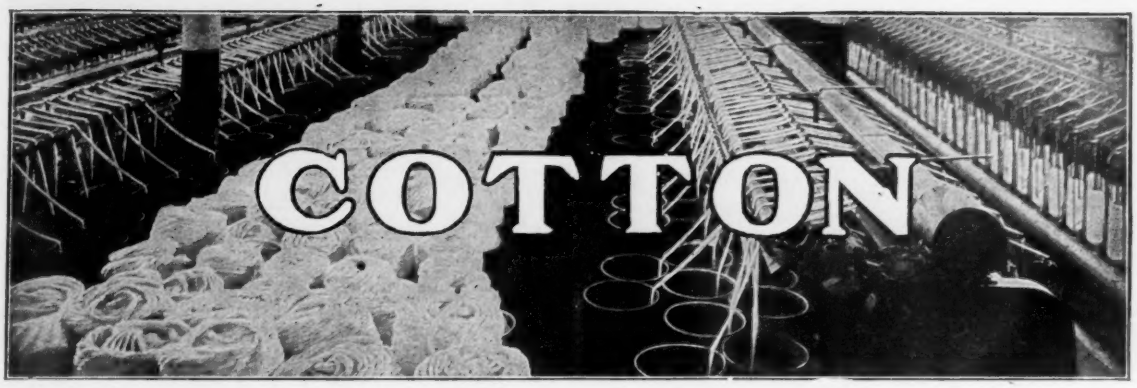
These are only examples from the daily grist of letters brought by the mail man. They are the straws indicating the direction in which the wind is blowing. The fact that they come from Canada and China, as well as our own country, indicates that operating executives the world over have many problems in common. Our part is to bring them together.

AMONG COTTON'S READERS

J. A. Ruth, Superintendent,
O. E. Kearns & Son,
High Point, N. C.

" 'Knitting Kinks,' properly used, will make COTTON the most valuable of all textile magazines to the knitting mill superintendent."

J. A. Ruth.



August, Nineteen-Twenty-Five

More Tax Reduction.

Whatever else may be said regarding the administration of the Federal Government during the last several years, no one justly can make much criticism of the handling of Federal finances. Annual expenditures have been reduced from around seven to below four billions of dollars. Meantime, the national debt has been reduced by about four billions. The annual interest toll has been cut from a billion to less than nine hundred thousand, much of it due to skillful refunding. Taxes, of course, have been cut, but not so much as those managing the finances of the Government have urged. Congress refused to accept the "Mellon Plan," as presented a year and a half ago, for cutting and adjusting the taxes, adopting a compromise measure instead. One of the results of that action is another large surplus of funds in the Federal Treasury and a larger one, barring further legislation before the close of the fiscal year, in prospect. That is to say, under the last tax bill the Government has collected about $250,000,000 which it didn't need and may collect before June 30, 1926, around $400,000,000 additional over and above what in normal course it should spend.

This last probably will be obviated by a new tax bill on which Congress will start working as soon as the regular session begins in December. The House Ways and Means Committee will begin working on it sooner. This will be primarily a tax reduction bill—may it be, as others in recent years haven't been, a scientifically formulated tax adjustment bill.

The faces of the powers that be are set against any legislative meddling with present taxes on imports; and, whatever the need for it, meddling there probably could cause more harm through the disturbance inherent to opening up the tariff question than good would be done via changes in schedules.

There isn't likely to be much meddling with the excise taxes, which in the main now fall upon luxuries and come nearer being borne by those who pay them than any other levies.

Changes no doubt will be made in the estate or inheritances, which now yield around $100,000,000 a year, and will be repealed entirely if President Coolidge and Secretary Mellon have their way about it. Congress more likely will reduce the rates than abandon this tax source.

The big reductions will be in the income taxes, and those paid by individuals. The surtaxes will be reduced from the present maximum of 40 per cent to 25 per cent or less. The normal taxes probably will be cut, perhaps by making the 2 per cent minimum the base rate for all incomes. Exemptions will be raised—how much depending on the strength of those who will talk most about taking tax burdens "off the backs of the poor."

It is unlikely that the corporation income tax—which in essence is an excise tax—will be disturbed.

Congress possibly may adopt the British rule, as advocated by Treasury experts, which exempts capital gains from all income taxes and permits no deductions for capital losses. The last bill reduced the maximum of these taxes to 12½ per cent and allowed for deductions for losses. Investigations indicate, however, that the Government is the loser on account of this rule—that more deductions are made on the score of losses than gains are reported.

Every reduction in the high income tax rates have, demonstrably, thawed out large amounts of capital that had been "frozen" by exhorbitant surtaxes. This has been helpful to business as well as the Government; for this capital, when thawed, has returned to the channels of private business and has yielded tax revenues which formerly were escaped.

The next Federal tax law will be based on a government operating cost of about $3,000,000,000 a year, aside from that of the mostly self-supporting postal service. This still will be approximately double the pre-war cost of Federal Government; but in all probability it will be the lowest ever again to be achieved. The figures envisage an aggregate cost of substantially only pre-war amount. For when allowance is made for interest on the public debt, the money spent on World War veterans, and the lowered purchasing power of the dollar, it follows that the Federal Government, as properly comparable with its pre-war status, is costing now only a little more than it did ten years ago. This cost can not be cut much more by mere economies; much further reduction can be attained only by cutting the Government itself—something not as easily achieved as it may be desirable.

After all is said, and much may be, about its wastes and extravagances, it must be admitted that, in the matter of post-war financing our Federal Government has led the world in retrenching and in adhering to elements of sound

policy. The example it has set has not been widely followed, even by other units of government in this country. There is some indication of improvement among these other units. There has been a slight reduction in the cost of state governments as a whole, state and local tax rates are not ascending as they did for a long time after the war, the local eagerness for selling bonds in markets made fluid by high taxes made higher by those bonds is beginning to decline.

On the whole the outlook as to taxes and to public finances in general is better—far better—than at any time since it was distorted by the war.

Plausible But Suspicious.

The National Education Association, at its recent convention, showed wise recognition of the veering of public opinion away from federalization when it decided to abandon its advocacy of Federal Government aid for the public schools. This matter has been agitated now for nearly eight years, the first proposal of Federal aid being put forward during the war when all roads, of thought and change, led to Washington. There was much plausibility in the plea, made by teachers and others, that the Government contribute to the States, on a "fifty-fifty" basis, a large sum of money for the eradication of illiteracy, for the pay of teachers' salaries and for common school education in general. But no greater threat to the schools, as agencies of public welfare, ever was made. Federal aid necessarily would mean Federal supervision, which in turn ultimately would mean Federal control of the most bureaucratic sort. Happily, the suggestion has been discarded by its most meritorious sponsors.

Unfortunately, the association of teachers did not go further and abandon its advocacy of a Federal department of education, under which Federal aid, as proposed in the original scheme, was to function. Education is not only of sufficient importance, and teaching is not only of adequate dignity, to justify the establishment of such a department, but education is of such great import and teaching of such undoubted worth and dignity, as to make a department unnecessary. To say that it is needed as a "recognition" is to reflect on both schools and teachers.

Beyond that, however, a department, without funds to distribute or authority to exercise would do no harm; but it could do nothing which can not be done by the present Federal Bureau of Education which supplanted such a department. A department, headed by a cabinet member, necessarily would be more political than the present bureau. Its political setting would cause it necessarily to become eager for authority and for funds with which to promote and sustain its importance. Ultimately, it would become a propaganda agency for Federal aid, as the first and insidious step towards Federal control through it of the schools.

Instead of advocating a department of education, why don't the teachers throw their strength behind a movement to expand the U. S. Bureau of Education—not along lines of authority, of which it has and wants none, but in the matter of facilities for helping the schools of the country with information and advice? That's where the need is. There is scarcely a community in the country that cannot support good schools, and there scarcely is one that will not do so if properly informed and advised. There is much information about education and teaching which the Federal Government only can collect and distribute advantageously. It should be allowed every facility for doing this—but no more. And for doing that no department of education is needed.

Senator Oscar Underwood.

The senior United States Senator from Alabama announces that he proposes to retire from office with the close of his present term, which will mark the end of thirty years' service in the United States Congress.

It seems that the South, the land of contrasts, in selecting men to represent it in Congress usually picks from either the ranks of highest excellence or the strata of least desirability. Underwood is an example of the first; examples of the second will occur readily to anyone. The retirement of one of the first kind always is unfortunate, for the chances always favor the selection of one of the second kind as his successor.

Once Democratic majority leader of the House of Representatives, then Democratic minority leader of the Senate, several times a candidate for the Democratic Presidential nomination and usually a strict party man, Senator Underwood's retirement will be lamented by thoughtful Republicans as much as by good Democrats. Conservative, courageous, studious, though not scintillatingly brilliant, he always is the true statesman. He isn't always right but he is always right as he sees it; he never has courted the passing breezes of opinion by sacrificing his own intellectual integrity.

More men of the Underwood type, whether Democrats or Republicans, conservatives or liberals, are needed in Congress and particularly as spokesmen for the South, often misjudged because of the antics of a contrary type.

Active public figures of the Underwood kind seem to be dwindling, notably in the United States Senate, where of all places they are most needed.

Crystal-Gazing.

Unmistakable evidence that practical-minded seers are applying definite thought to possible changes in the cotton mill, with especial regard to mechanical development, is apparent. The principles of cotton manufacturing, fundamentally, have undergone few especially radical or revolutionary developments for many decades, and there are in the industry those who are turning their thoughts toward what might be done.

Two articles in this issue present the views of men representing this inquiring class who predict and suggest some surprisingly radical changes. "Wanted—A Prophet," and "Life in the Mill in 1950" are published this month with the view of inducing further thought in this direction.

Improvements and refinements are constantly being made, and the industry has attained a high plane of efficiency. Much more will be accomplished in this direction, under present practices. Eventually, however, basic changes will occur, many of which will bring rapid strides toward still greater efficiency. Slowly, perhaps, but surely, measures that improve are certain to result from the application of such thought as that revealed in the two articles mentioned.

Wanted—A Prophet

BY U. DODGE.

Mark Twain is credited with saying that a difference of opinion leads to horse racing. There is at least this to be said in favor of the horse race; it settles the argument. Unfortunately, a difference with the opinions here set forth cannot be settled so easily, yet it is hoped that there will be differences. The final arbiter must be that long, never-ending race between cost and production in which the mill man, acting as stake holder, often finds himself on the losing side, but it is hoped that disagreements with these few glimpses into the future will stimulate the thoughts of the dissenters into the development of better methods than are here imagined. In that event they will have served their purpose.

The many ramifications of textile work as we know it today are so varied, the entire scope of the industry so vast that any attempt to cover the whole field with prophecies as to the manner and trend of future development would result only in that *reductio ad absurdum* evidenced by the little boy who has bitten off more than he can chew. The ordinary processes of weaving cotton into cloth affords sufficient opportunity to a fertile imagination willing to peer into the future and courageous enough to record the picture as it sees it. If the visions are faulty, they are at least better than none. Let those with clearer sight make the corrections.

Prophecy, even in a general way, is always dangerous. So many things can and do happen. Prophets are always without honor in their countries and rightly so. Reduced to specific terms, prophecy is almost suicidal unless based upon deductions drawn from past experience and forecast with an eye to the unexpected. Even so, it would appear that cotton manufacturing has never been so direfully in need of a prophet as it is today, never so lacking for one to lead it up out of the wilderness, or at least point the way. For never before have we come to a place beyond which it seemed impossible to pass without disaster, never endured such long continued stringency, never floundered so deeply in the morass of a business depression from which an eventual emergence did not happily seem probable.

Since the first inception of this, our mechanical age, when James Watt gave to a reluctant world a thing of steam and steel which was destined with its inexhaustible strength to revolutionize the life of humanity by the speeding up of every conceivable form of manufacture, and the development of what we now call transportation, the manufacture of cotton has kept pace, stride by stride with contemporary industries. It has been a wonderful thing, an awe inspiring thing to think about; that man, having lived for untold ages in much the same way should suddenly, in the short space of less than two hundred years, so change his condition that the labor of the ordinary worker could afford so much more than a bare existence, that he could bring to his everyday use hitherto undreamed of luxuries which not even the wealthy had been able to enjoy; that life should mean so much more, offer so much more, that it should be made to give so abundantly from an unexpected store of material comfort, learning, and wealth.

In all of this the manufacture of cotton has had its rightful share. We have gone rapidly forward, spinning and weaving as never before in the history of the world, expanding our use for fabrics of every conceivable variety until today there is more cloth made than was ever before thought of. Yet there is no doubt that the textile industry as a whole, not particularly in this or in any other country, but as a world-wide industry, is in the doldrums. Important as it is vital to the comfort and convenience of a myriad people, it is fighting harder today for an existence than at any other time.

There are, of course, a number of reasons for this condition, including the war which is always a good thing to fasten any blame on which is not nailed to something else. Bankers will tell you a lot about foreign credits if you can understand them. Biologists will fill you full of dope about the different races of mankind and their incompatibility if that means anything. Mill superintendents who can't get their costs down to meet competition will swear that somebody built too many mills, and they may all be right to some extent. But in the main they will all be wrong, because the redemption of the cotton manufacturing industry, as it exists today, lies not particularly in external adjustments of international credits, or racial prejudices, or limitation of production, although all these things would doubtless prove a temporary help. The salvation of this great business of ours must come not from without, but from within, by a radical reorganization and improvement of our methods of manufacture.

Certain it is that as long as there remains in the world one man too poor to provide for himself and his family whatever clothing is essential to their needs, there are not too many mills. Their costs are simply too high for him to meet. Let us look then a little more closely at ourselves than we are accustomed to, generally, and see if we have done as well as we might have—as well, in fact, as we like others to think that we have. No doubt Sally is a nice little girl and we are justly proud of her. When the neighbors pat her on the head we take pleasure in recounting her smartness and her cute little ways, but the fact remains that occasional necessary interviews in the woodshed would seem to indicate that Sally is not quite all that we could wish. Let us therefore, in the same spirit of prayerful chastisement give our cotton mill processes an overhauling in the hope that some good will come of it. Understand, we do not expect too much, but we can, at least, be optimistic.

To a mind familiar with the general history of the textile industry and conversant with the marvelously ingenious mechanical solution of the manifold problems attendant upon the conversion of raw stock into finished fabric, there is one astounding fact which becomes startlingly apparent upon consideration of our modern methods. There is nothing new about them. That is, in all of our picking and carding and drawing and spinning and weaving we have nothing that was not known a very long time ago. We have never developed any fundamentally new or original method of handling the stock between the bale and the cloth.

When John Kay invented the fly shuttle about 1733

and thereby gave the art of weaving its greatest forward step in several thousand years he only rendered more facile an operation which is probably the oldest manufacturing method still in use. The interlacing of fibers to make cloth, the passing of some form of weft through a warp is still being done today as it was originally done so long ago that the memory and records of man run not to the contrary. We do it better now perhaps, certainly we can do it faster, but the principle has not changed one iota and neither has the actual manner of its accomplishment. With all of our boasted mechanical genius and all of our understanding of the physical laws which govern moving bodies, we have still a shuttle which, starting from a dead stop, reaches a high speed, travels a short distance and comes to another dead stop many times a minute at a great loss of power and efficiency.

Furthermore, there is no doubt that this form of mechanism has about reached the limit of its development. As desperately as we are striving for it, it is evident that no great increase of speed is going to be possible with the reciprocating shuttle. All of the improvements in weaving, wonderful as they are, are every one based on the original idea of passing a bobbin of thread forward and backward through other threads previously placed. Is this the only way that it can be done?

In other processes of cotton manufacture we see the same persistent adherence to age-old principles. It is positively uncanny. The only new idea which was not already hoary long before the Children of Israel quit Pharaoh cold in the road and went into business for themselves is that embodied in the separation of the lint from the seed by the saw gin.

The pickers with their whirling beaters are but slight improvements on the vibrating bow string with which primitive man extracted the trash from the fiber, and work in much the same general way. Cards, a step in advance of the loom, have changed the intermittent, back and forth motion of the old hand card to a steady rotary one which doubtless does better work, but fails of any new fundamental idea. The fly frame, together with all of the early spinning frames of Arkwright and others, who used flyers on their spindles, was anticipated as long ago as 1500 by Leonardo da Vinci, an Italian, who has left drawings of the idea which it is thought he filched from more ancient records. Even our spinning frame, with its high speed spindles which have been rendered possible by modern steel and machine shop accuracy, is simply the perfection of a spinning operation common not only in all of Asia and Europe before the dawn of history, but also in America. There may be something new under the sun. There is certainly nothing new in the spinning and weaving of cotton as it is practiced today save the metamorphosis of very ancient manual methods into the amazingly swift and accurate mechanical actions characteristic of this age of machinery.

The trouble with us is that we have failed to develop any new ideas—fundamental ideas. We have taken it for granted that a shuttle must lay the filling in the shed of the warp by going across the warp and then coming back, simply because that is the way our forefathers did it. To be sure it is the most obvious way, and it is somewhat difficult to imagine an improvement. We have, nevertheless, arrived at the point where another, better, more rapid and efficient method must be found. In the cleaning processes we still hold down a thin sheet of delicate fiber with the strength of a Hercules and beat it with the fury of a thousand mad devils. After we have done that and sawed through it with sharp saw teeth and scratched it fore and aft and crossways with needle points and drawn it out into smaller and smaller strands by holding it tightly between rolls while one fiber is slid over another, is it any wonder that it has lost some of its strength? The wonder is that it has any left.

We are carding and drawing and spinning in the same old way that we have been doing since there has been a weaving industry, and no one can deny that we have remarkably clever machines for the purpose. But are we not, after all, following antiquated, outworn methods? Is there not some more efficient, less injurious and more rapid way to convert the loose fibers into yarn and the yarn into cloth?

Possibly there is not, but if there is, we do not seem to be seeking it. All of our efforts are devoted to the improvement of ideas and mechanisms already well known, to the speeding up of familiar designs of machines by improvement in their material and construction rather than by discarding them for more original conceptions. In this we have reached a point beyond which we will not go very far without a radical departure from present methods. We stand at the beginning of a revision of textile ideas the extent of which can at this time only be imagined.

It has always happened since the first beginning of this mechanical age, that any industry which has come to an apparent impasse for the lack of some vital process not yet developed, has been able, when the need became sufficiently urgent, to supply it. Eli Whitney thus gave the cotton industry new life with his saw tooth gin which was invented at a time when it seemed that without it there could be no further increase in the use of cotton. Somewhat later, when the disposal of cotton seed grew to be an incubus which, by its very volume, threatened to suffocate a growing industry, the discovery of uses for this waste product and the establishment of cotton seed oil mills relieved it of this burden and gave to it an added impetus. There are many other examples which could be cited, yet we have today apparently reached a stage where we lack half a dozen vital improvements which are not in sight.

Until we get them we shall stagnate. But let no one say that they shall not be supplied. Their coming is as inevitable as the crack of doom. The stagnation shall endure only so long as it is endurable.

Reference has frequently been made to this as the mechanical age. It is more than that. It is the beginning of the electrical age, and it is but natural in casting about for drastic changes in some productive process, that the mind should turn to electricity for the answer. Its uses are so varied, our present knowledge of it so small in comparison with what seems as yet unknown, and possibilities for its future development are so enormous, that almost anything might be imagined and predicted without fear of contradiction or ridicule. It is to electricity, then, that we shall turn in our previsions, bearing in mind that our present limitations of knowledge and accomplishment are not immovably fixed, that today's desert is tomorrow's garden, and that by faith are possible all things.

Our first and most imperative need is a cotton picker.

It is as much of a necessity now as was ever the cotton gin before its birth. Without it, we have not only reached the limit of the world's production, but are in great danger of its constant diminution. Cotton is a very difficult crop to gather. All of the bolls in a cotton field do not mature at the same time. The field must be picked over several times from the first ripening of the early bolls to the final gathering. In addition, the plucking of the staple from the boll in such a way as not to bring any part of the boll with it, does not lend itself to an easy mechanical solution. Even could this be done—and it can be done fairly well—no machine can be depended upon to discriminate between ripe and unripe bolls, and therein lies the main difficulty.

That is the rock upon which has split the ships of a thousand hopeful inventors. Not even monkeys can do it. What is the answer? Every one knows what it has been so far. It lies in the tips of the nimble fingers of a myriad children, both white and colored, working "from kin 'till caint" side by side with their parents. Whatever can be said for or against this form of child labor, the fact remains that it is rapidly on the decrease, partly because of the decrease in the number of large families of children, partly because a great many of them no longer live in the country but have moved to town, partly because the parents of those who still live on the farm do not require them to do as much of this work as formerly, and for other reasons.

We are, therefore, in the position that we must either develop some mechanical way to gather the crop properly, separating the ripe from the unripe fiber to the exclusion of objectionable trash and dirt, or else we must gather it all together, boll and fiber, and so improve our cleaning methods in the mill that all cleaning can be done after it is picked without injury to the staple. Looking into the immediate future, it would seem that the most obvious development would be at first a combination of these two methods, that is, a mechanical picker, not entirely satisfactory perhaps, but good enough to gather a crop that it will be possible to clean. We have already arrived at that method in the use of "bollies" or "snaps" familiar to spinners of low grade yarns. These are bolls, gathered without any attempt to extract the fiber from them, the whole afterward being run through cleaning machinery to separate the lint. Afterward, we shall in course of time certainly arrive at a solution which shall be as efficient as is necessary. It is unbelievable that it can never be done. Its development is a matter of time and does not seem to be in immediate prospect. Whether it shall be an electrical solution or not, does not appear, but it would seem probable.

The eventual use of electricity in the handling of cotton should have a great fascination to an imagination familiar with the present necessities of the trade and the peculiar influence which a certain kind of electricity has on the cotton fiber under favorable conditions. Everyone is familiar with "statie," and everyone connected with cotton manufacture knows it better than he would like to. Heretofore mills have regarded it as bugbear to be avoided at any cost or inconvenience, but it is not at all inconceivable that it shall in time become a valuable servant instead of an enemy.

There is much yet to be learned about this "statie" and many uses to which it could be put if its action could be governed. It may never be possible, but it does not seem to be altogether beyond the bounds of probability that it could be used in some manner in the selection of the ripe bolls of the cotton plant and the extraction of the lint from them. It would also seem, if capable of any use at all along this line, that it could be a valuable accessory to the cleaning processes. The idea of hammering the trash out of the cotton as we do now is fundamentally wrong. For a long time we have used this method for lack of a better. Of recent years we have adopted again, after a period of disuse, various forms of openers, which in loosening up the cotton and aerating it after being compressed in the bale, take the place of the old-fashioned "mix" in which several bales were torn apart and allowed to lie on the floor until the fiber had regained its elasticity. We have saved some floor space doubtless, but no new variations of this idea, and no ingenious combinations of various machines is going to give us much better results. We must leave old institutions behind and strike out into untried paths.

Some form of machine which would widely separate the lint, probably by mechanical openers in conjunction with air currents, and then subject it to an electrical action which would throw out the trash and dirt may be an extravagant fancy, but should not be branded as such before it is finally disproved by practical tests. There have been attempts at such a process. They have not been altogether successful as yet, but that is no sign that they will not be. High tension, low voltage currents have been used successfully in ridding cotton mill processes of objectionable "statie," notably the carding. The same idea has been applied in extracting dust from the air in cement factories. Does it not seem possible that we might have at hand a helpful genie whom we have been too negligent to let out of his bottle? At any rate we cannot make any great improvement in cleaning the fiber of its impurities until we develop something altogether foreign to our present method. Along that line we have reached the limit, both as to picking and carding machinery.

Drawing, with its doublings, and fly frames, with their drafts and slowly revolving fliers, are both unnecessary, and should by this time be obsolete. A realization of this is evidenced by the modern tendency to skip as many of these processes as is commensurate with the fineness of the numbers wanted and the quality of the yarn expected. At present we cannot eliminate them entirely, but doubtless will in time. It would seem that we must arrive at the ability to deliver a practically even sliver from the cleaning process which will, at the same time, be sufficiently fine to spin directly without further drafts. Mechanically, both the drawing and the fly frames have reached the limit of their perfection. Except for minor refinements of design, which may serve as talking points for salesmen, they are not liable to further improvement, which is immaterial as they will be done away with eventually.

The spinning frame must stand to all intents and purposes as it is until a discovery is made of some different and better mode of twisting. What this will be it is not easy to say now as there is no present indication of such a possibility. If further study of electricity reveals to us some whirling form of current which could accomplish the result, it might possibly supply a spinning frame with-

out spindles, bands or gears but capable of an output of undreamed quality and quantity. At present such a contingency seems merely a figment of the imagination.

In weaving we have the greatest room for improvement of all the usual mill operations. No other process is as slow, as laborious or as costly as the weaving. Wonderful mechanism though our modern loom is, it is but the big brother to the long since forgotten Assyrian, Egyptian and American weavers who, squatting in the dust of their villages, accomplished upon a warp stretched before them exactly the same operations—and here is the astonishing thing—in exactly the same way. We are more rapid, possibly more accurate, certainly more uniform in our mechanical weaving, but that is all. Should the reciprocating shuttle never be superseded by some form of shuttle with a rotary movement, of which many have been tried already with no great success, then it is evident that we must design a more rapid, less ponderous motion for the purpose of throwing the shuttle to and fro than we have now. Else will we be forever limited to present speeds.

A shuttle which never retraces its path and which travels in a circle is subject to no such mechanical limitations as circumscribe the present arrangement, but it is inevitable that it should have its drawbacks. It cannot to a certain extent duplicate the general make-up of cloth which we are now accustomed to, especially in the making of desirable selvages, but it should find its uses. For fabrics which are to be cut by manufacturers into garments, an attractive selvage is not a prime requisite. Cutters should not object to a cloth which has been made in the form of a tube and then split along a line of selvage which would of necessity have a fringe of severed ends, especially if at a decreased cost which would be possible with an increase of productive speed; neither would the public.

This of course is only one of the problems of the rotary shuttle. There are others, and more serious ones, but they must in the end be overcome. Since we are faced with the necessity of a decrease in the cost of cotton goods to the consumer, and since this decrease can only come through simplification of processes and increases of speed along the line, some such changes as outlined in the suggestions advanced must take place before we can be said to have taken a definite step forward from our present position. The cost of planting cannot possibly be made much cheaper, but the cost of gathering can be lessened by mechanical pickers. From that point it is up to the mill. And that it is up to the mill very seriously even at this time, cannot be doubted by anyone conversant with the general condition of the business today.

The preeminence of woven cotton cloth has passed. In competition with it have recently risen a number of other fabrics more attractive in appearance for wear, more suitable in other ways for special uses—mixtures of cotton with wool and silk and other fibers—"jersey cloth" and others. The virtual abandonment of cotton yarns for hosiery purposes is beyond the limits of the present article, but significant. Cotton may be king for a long time to come, but cotton mills as now operated may not remain the court favorites that they have been. Other uses for the cotton fiber and its chemical constituents and other methods of manipulation are making strenuous bids for royal favor. Probably the most alarming from a weaving standpoint are the recently developed artificial fibers of various kinds which are chemical structures and not dependent for their source of raw material on what has hitherto been recognized as legitimate weaving fibers. A silk purse from a sow's ear is already an accomplished fact and a wedding dress from the old sawdust pile is possible. Cotton, with other fibers has already suffered serious displacement from favor so far as dress is concerned by these usurpers, and it would seem that from the making of the fiber to be woven it would be but a short step to the making of the whole cloth, not woven, but turned out in sheets as paper is.

There is no chance that this form of synthetic cloth will ever be able to rival a woven fabric in beauty, durability or adaptability to wearing apparel. There are, however, uses to which it could be put, and its growth in popularity would be a serious blow to the weaving industry.

All of these things may be a long way off. Most of the calamities which we expect do not happen. But it is well to foresee and anticipate what might befall, not wait until it does and then blame it on the weather or the last election. Let it be said again that there are not too many mills either in this country or in any other. Our methods are too old, too lengthy, too expensive. In this age of wonderful things it does not seem that we are getting our share of inventive genius; that we are standing still as others forge ahead, that we are in danger of floundering in the wake of progress.

Are we? With us lies the answer.

Those who are concerned with fans and their applications will be interested to learn of the second edition of "Fan Engineering," a handbook for the engineer, architect or student dealing with centrifugal and propeller fans, their properties and applications in the arts and industries. The first edition of this very useful volume was published in 1914 by the Buffalo Forge Company, Buffalo, N. Y., and edited by Willis H. Carrier a recognized authority on air conditioning. In 1920 a second printing was found necessary. The present edition, edited by Richard D. Madison under the direction of Willis H. Carrier, is a thorough revision and brings the book completely up-to-date regarding data, general practice and apparatus.

In preparing the material for the edition special effort has been placed upon its general arrangement so that a subject can be readily located and the desired information at once obtained. The book is therefore divided into three parts. The first part deals with the physical properties of air, heat and humidity, the flow of air in general and as regards the fan and systems of air distribution in particular. In order to give to the psychrometric charts the full attention which they deserve these have been prepared in folded form with small scale diagrams on the adjacent pages for graphically illustrating the method of obtaining the desired information. Numerous other tables and charts have been added to Part I. Part II relates to the application of air and air movements to the various classes of work for which fans may be adapted. Part III opens with numerous examples of selection of fans and heating and ventilating apparatus, followed by a section on materials, stresses, balance, etc. The remainder of this part contains performance tables and general information concerning fans and fans system apparatus.

Copies may be obtained from the Buffalo Forge Co., 490 Broadway, Buffalo, N. Y. Price, $4.00 per copy.

Life in the Mill in Nineteen-fifty

BY "CRYSTAL BALL."

(NOTE:—To make this article more understandable to the reader, he must bear in mind that the writer is endeavoring to foresee and foretell what a mill will look like in 1950. To intensify the contrast he will take a gentleman who was superintendent of a mill in 1925 on a tour of inspection of a 1950 mill, and who has not been in a mill since 1925.)

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The main characters in this little forecast are as follows: The Superintendent—Old time mill man endeavoring to find out how the mills are run in 1950.

The Production Manager—New 1950 model title for the old time mill superintendent.

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Supt: I understand this mill game has gotten to be very scientific, and I would like to go through your plant and see just how it compares with the one I used to run 25 years ago.

P.M.: All right, but before we start let us get a few things straightened out. In the old days I believe they had a superintendent, an overseer for each department, and a second hand for each room.

Supt.: Yes, that's right.

P.M.: Well, we do not have that now. We are running here one of a chain of standard mills. That is to say, we make practically the same thing all the time in the mill over which I am the production manager. This is a 60,000 spindle mill with about 1,200 looms, and is only one unit of a series of units all belonging to the same company. Each of the units make a different type of cloth. Owing to the specialization, much greater production, better quality, and decrease in cost is obtained today as compared to your day. I am what is known as a Production Manager, and my job is to turn out the cloth. All I have for assistance is a man in each room to act as a time-keeper, inspector, and who sees that everything about the room runs smoothly, and is in order. We have so few hands that his job is comparatively easy.

Supt.: Judging by the past, I should say that you had some job.

P.M.: It keeps me busy, and probably could not be done without the many innovations, which we have installed.

Supt.: How many different rooms or operations do you put the stock through? In my day we heard a lot about shortened processes, but did not make much progress, outside of eliminating some picking and drawing operations.

P.M.: We have just four operations or rooms:

1. Opening and cleaning.
2. Carding.
3. Spinning and winding.
4. Dressing and weaving.

Supt.: That sounds something like the old system.

P.M.: Maybe, but wait until you see it.

Supt.: Say what are all these clocks doing around your office?

P.M.: Well, do you remember what a time you used to have trying to keep your mill in balance? Here is the way I do it. This clock here represents one num- of yarn from the winding room that is being supplied to the weave room. The Standard production which I require for today is that figure you see just below the clock. This is a predetermined figure from past average of the looms. Now look at the figure in the clock. This figure represents the stage to which I have arrived so far today in attaining the standard or required production. As soon as the two figures correspond I know I have arrived at my needs for the day, and by turning this button here I light a light in the winder room which is a signal for these machines to close down. The master clock for the weave room reads in instantaneous and average efficiency for the day. At the present time the efficiency is reading 99 per cent and the average is 98.8 per cent. Rather higher than they used to get, but made possible by many improvements and innovations.

Supt.: (With mouth agape) Marvelous!

P.M.: You see this board here, well the clocks on this board show me the amount of waste from each room blown to the waste reclaiming room, and also the amount of usable waste blown back to us. You see they still grow cotton with some seed particles and leaf in it, although it is thoroughly cleaned right at the gin. Practically all we have to do with it is to open it; in fact the only reason we put the stock through the comb-card is to get it in usable form.

Supt.: I have not heard you mention your pickers yet.

P.M.: We got rid of those about 15 years ago, we do not have them any more.

Supt.: Will wonders never cease! Just what machines do you use to make cloth? Twenty-five years ago we thought we did well to cut the picking process from three machines to two, and now you say you do not have any. You must be magicians.

P.M.: All right, I will give you an idea of the processes, but will leave the handling of the stock to your own viewing as we pass through the plant. We now receive the cotton in a new type receptacle, a special paper tube about the size of the old bale is the latest container. This tube is absolutely sealed top and bottom so that nothing can harm the cotton. We own our own cotton fields so that all the cotton we get is absolutely correct for our own use, we do not have to bother to staple it, or even make large mixes. You may think the containers are expensive, but we have used some of them as many as 25 times and they are still good for more. In the end they are much cheaper than the old burlap covering, and the state of the cotton in the bale is beyond comparison. The cotton being hermetically sealed contains the moisture with which it was imbued at the gin. This gives us cotton to start with of the same moisture content, another distinct advantage.

Supt.: As you receive the cotton would it be as clean as

the cotton on the old style, after it had been through the pickers?

P.M.: Yes, it would be even cleaner, judging by some samples that I have seen. You can judge for yourself as we pass through the mill. As I set out to say, the container holding the cotton is placed in a special holder, and a plunger starts in at one end and forces the cotton out at the other end. As it emerges it is stroked off by a sort of a spiked apron, which deposits or feeds the cotton to the aerator. This machine thoroughly opens the cotton and blows it to the ageing bins on the top of the main mill. I forgot to state that the medium of opening the cotton is not by beating it, but rather by the use of air currents. We treat the cotton gently in this day. We have four bins in which the opened cotton is allowed to age under fixed conditions of temperature and humidity.

From the aerating rooms the cotton is automatically blown to the comb-card. This machine is fed automatically, similar to the manner in which the old breaker picker hoppers were fed. By means of an evener motion this machine delivers material ready for the spinning frame even enough so that one yard weighings will not vary more than one-quarter of a grain.

Supt.: In what form does this sliver or material from the card go to the spinning frame?

P.M.: The stock from the card is wound on spools and then sent to the spinning frames. Here it is spun directly into yarn. The spinning frame no longer winds the spun yarn onto a bobbin, but rather onto a cone similar to the old cone winder. When I tell you that a spinning frame running on 15s yarn runs a whole day without a stop owing to the automatic doffing arrangement and the fact that such a large package is spun, you must realize that the spinning frame has been modified considerably.

The filling yarn is then rewound to a bobbin that will fit the shuttle in the loom, while the warp yarn is run directly on the warper. I will not say any more about dressing until you see it.

Everything is now ready for weaving. We are now using a loom in which the shuttle is controlled and actuated by magnetism. This has done away with many complicated parts on the loom and makes it silent in operation.

Supt.: How fast do your looms run?

P.M.: 300 picks a minute.

Supt.: I shall certainly be interested in seeing this loom in action.

P.M.: I will give you an idea of the building layout before we start and you will then be able to tell where you are as we go through the plant. On this plan here you see this building marked storing and opening. This probably looks small to you compared to the immense storehouses that mills used to have. However, you see by owning our own cotton fields we do not have to keep large stores ahead, and the market prices mean nothing to us. We never have more than four weeks' supply ahead at any one time. The cotton after going through this room is blown to the aerating rooms at the top of the mill. The cotton then drops from here down to the carding and spinning room on the second floor and thence to the weave room on the first floor. The cloth from the looms is sent to our central finishing plant that does all the finishing for our mills.

Supt.: I have got a lot more questions I could ask, but I think we had better start along.

P.M.: All right, let's go out to the opening room!

The Trip Through the Plant.

P.M.: This building you see on our left is the opening room. There you see the railroad tracks where our cotton comes in. There you see them unloading a car. Note the special container, that I have already described to you, see how it lands on that special conveyor and disappears into the opening room? Inside that building is a network of conveyors that run the whole length of the building. There is just room enough between each conveyor for an aisle to walk through, and any one of these conveyors can be filled with bales right from the car, by use of that small movable section of conveyor you now see them using in unloading that car there.

Supt.: I see; very simple and certainly labor saving.

P.M.: Yes, it takes just two men to handle all the cotton. You see we do not even have to weigh it. All we record is the number on the outside of the container.

Supt.: How many bales can you get in there?

P.M.: We can easily store 2,000 bales. We can put two layers on the first floor and two layers on the second, 500 bales to a layer. I call them floors, but in reality the floors have been left out, and as you can see there, it simply looks like sets of conveyors one on top of the other. You also want to notice that they have a decided slant toward the farther end, which tends to keep all the bales down there. The upper layers are loaded by a special inclined conveyor, requiring no more labor than to fill the first layer. As I said before, two men handle all the cotton.

Supt.: Some saving here, that's sure!

P.M.: Let us walk down through the conveyors to the other end of this building and see what there happens to the bales. Now here you see a series of levers, by means of which the operative can release any bale from any conveyor he wishes. See that bale just released? Let us follow it. There you see the bale entering the machine, that takes the covers off the top and the bottom of the container. These covers fit so snugly that it takes a machine to pull them off, then, too, the covers are not harmed by the machine. Now note how the bale with the covers off is released by this machine and rolls onto the holder of the aerating machine, and the plunger starts to force the cotton out. We have a battery of 4 aerators, and from the car door through this machine the bale or any part of it is never lifted; it is simply rolled and guided.

Supt.: This is certainly a wonderful machine. Can we see what is happening on the inside?

P.M.: Surely! Just look in through this window while I turn on the light. Notice how the air currents strike the cotton as it issues from the feed rolls. Then notice how the tufts of cotton seem to be carried along through the air, and then suddenly seem to disappear. Well, that is caused by cross currents

of air. We discovered that air currents controlled and directed properly will do more towards opening cotton than any mechanical beating could ever hope to obtain. Then, too, you see the cotton comes in contact with nothing, you might say, and can therefore, not be injured in any way. Now come a little further along towards the front of the machine and note where the little dirt remaining is taken out. This is really a precautionary measure and not absolutely necessary, because, as I stated before, as much cleaning as possible is done right at the gin. There you can see the cleaning is accomplished simply by a series of baffle plates and the old-time grid bars. The pipe you see there on the end of the machine is the one through which the cotton goes to the conditioning rooms at the top of the mill. We only have one man in this room to look after the aerating, and he does it easily.

Supt.: That is certainly wonderful, way ahead of anything I had ever imagined.

P.M.: Now let us go up and see one of the conditioning rooms, and I will tell you how they are filled and emptied. Of course it is a simple matter to fill these bins. The air used in the aerator serves as force to blow the cotton up to the conditioning rooms. Therefore, to fill the bins we simply let the cotton blow into them, and, when one is full, switch the cotton into the next bin.

Supt.: Very true, but how do you keep the cotton level in the bin?

P.M.: That was a problem, but here again air currents helped us. We let the cotton fall into the center of the bin, and then by means of a leveler that travels back and forth in the bin the cotton is kept distributed evenly. At the particular point where the cotton tends to fall, we have a strong jet of air blowing up, this tends to spread the cotton out and the leveler completes the job. After the bin is full, we fill reservoirs under the floor with a special salt solution, which is evaporated away into the bin by means of steam coils. The amount of solution let in is predetermined, and is just sufficient to treat the amount of cotton that the bin holds.

Supt.: What is the big idea of this special salt?

P.M.: It seems to soften the cotton and make it work easier, also keeps its moisture content more nearly uniform throughout the different processes, and helps to keep down static.

Supt.: We used to use a soap solution on waste, but I never tried anything on regular cotton.

P.M.: Now let us look in this bin and see it being emptied. There you see a wall that looks like a spiked apron; well, that is just what it is. The floor is not really a floor but simply a huge apron. You see the elevating aprons comb up one whole side of the pile depositing the stock on that traveling apron at the top, and the bottom apron, which turns very slowly, brings the stock up to it. This room is nothing more or less than a big hopper. One man is required to look after the conditioning operations.

Supt.: The further we go, the more remarkable your system gets, and if I asked all the questions I think of, you would be with me about a month more. However, let us go and see this comb-card, as you call it.

P.M.: As you remember, the cards are on the second floor, directly under the aerating rooms. Here we are in the card room. Note how the cards are laid out in long rows up and down the mill. We found this system to be the best, both as to savings in labor and materials. As you would expect the hoppers at the back of the cards are automatically filled by a conveyor system that receives its cotton from the system we saw emptying the bins.

Supt.: Well! Well! That is certainly a strange looking machine.

P.M.: No doubt it is to you. Let me show you the chief features. The rear half of the machine is the card, which prepares the stock for the front or comb part of the machine. Here you see the two evening motions that gives us that extreme evenness I have already told you of. Now note how the spool is automatically doffed and a new one put in its place, and note that the spool does not stop here but lands on a conveyor and is away for the next process. No one handles any stock in this room at all, even the empty spools are returned to position for doffing by a conveyor. All the help we have on our cards are fixers.

Supt.: Who does all the cleaning?

P.M.: We have a regular cleaning crew that takes care of the cleaning of the entire mill, machines, floors, windows, etc. The cards, however, do not need as much cleaning as formerly, owing to the fact that all waste is removed by a vacuum system and the cleaner state of the cotton being handled. I do not see how you ever did anything without using a vacuum system, as far as cleaning goes.

Supt.: I have been noticing how wonderfully clean your rooms and machinery look. It certainly must be a pleasure to work around these cards without any dust flying around. By the way, how many pounds will one of these machines turn out in a day; they appear to be going pretty fast.

P.M.: They have a maximum production of 2,500 pounds in 40 hours. I believe this is considerably more than any card used to turn out in your day. It took the machine builders some time to get this machine, but their business became so stagnant that the more progressive firms realized that something must be done so they went out to design a machine that everyone would have to have, and this is it. The same thing is true in the spinning and weaving machinery, in order to get new business, new and better machines were designed. Let us follow the spools and see the yarn spun.

Supt.: That is certainly a queer looking spinning frame. I see the cones are automatically doffed off as they get full and drop on that conveyor.

P.M.: Yes; and you see that spool there being changed automatically and the empty one starting back for the cards?

Supt.: Where are your spinners?

P.M.: Oh! We have a few of them. Here comes one now.

Supt.: What is she doing, running?

P.M.: No; we provide them with a power-driven roller

skate, with which they can cover an immense amount of territory, with but very little effort. With this new type frame we have but very few ends that get broken or spools that get set up poorly, and so a girl would get more tired walking than working, hence the absolute necessity for something to carry them around. Incidentally, we save about 75 per cent of the number of spinners we would need without them. You see all the tiresome work of doffing and creeling has been eliminated.

Now we come to the winders made feasible by the new type of spinning frame. Here again the doffing is automatic, but the end of one cone has to be tied onto the start of the next, which requires a little more help than spinning, but owing to the long stretch of yarn on a bobbin, one cone will last a long time. The winder hands have no lifting to do, they simply tie the spools together. There you see a spooler hand on her power-driven roller stool, which enables them to sit as they work. Here again the extreme length of the alley makes such a thing possible to operate.

Supt.: I notice the filling bobbins dropping off the spindles into those little chutes, but where does it go to?

P.M.: That lets the bobbins drop down through the floor into a system of conveyors that eventually drops the bobbins into the hoppers directly over the batteries on the looms. The batteries are automatically filled from these hoppers. If there is a surplus of filling it continues in circulation, and through one of the clocks in my office I am kept informed of this fact, and if it gets too large I stop some winder spindles. The warp yarn is not rewound in any way, but comes off the spinning frames and falls on a conveyor that carries it directly to the warp preparation room. Let us pass down there.

Supt.: You do not spool the yarn any more?

P.M.: No, that is not necessary with the big cone on which we spin. All we have to do is warp it. This is done on those huge section beams you see there; notice that the yarn pulls off over the end of the cone, and, as you can see, an enormous speed is thereby permitted. This has really proven to be a big advantage over the old style spooling and warping, owing to the fact that the yarn has not been stretched through having to drag a weight around such as the spool. When a creel runs out we change the whole thing, creel and all. This saves an immense amount of time. The ends are tied together similar to the manner in which you used to tie warps.

Here you see them putting a set up at the back of this slasher. The beams are so large that they have to use a special hoist and the beams have to be positively turned. Once a set is started it is never stopped until all the warps have been made from it. This reduces waste, insures uniformity of size and moisture content, and wonderful weaving warps. One factor that makes our warps run well is the fact that we spin such long lengths of yarn that we have very few knots; and long, long ago it was shown that knots were the cause of much loom stoppage in the weave room.

Supt.: That is certainly right. How else does your slasher differ from the one we used to have?

P.M.: As you would naturally expect in this day, we are able to run our slashers about five times as fast as they used to. This is due to an increase in drying capacity, for we now use electricity to create the heat for drying the warps; that is what makes our slasher appear short and low down. Then, too, we tie one set onto the other, which does away with laying in on the front, putting in and taking out lease rods, etc. Perfect warper beams were necessary before we could accomplish this, however. All our warps are doffed from the slasher immediately tied to the proper lease, and then if this warp is not needed in the loom immediately, it is put in a can or cylinder and sealed up tight. The reason for this is so that as the warp weaves it will tend to give off moisture. We have found that we get the best results under these conditions. Now let us go into the weave room, and there I think you will see something that will really seem remarkable to you.

Supt.: If you have got anything more remarkable than I have seen so far, I will be surprised.

P.M.: Well, there is the loom, and I think you must admit it is different from anything you ever expected.

Supt.: Yes, I guess it is; it looks like anything but a loom.

P.M.: You see the warp is entirely encased so that no dirt, lint or other harmful substance can get onto it; the same is true of the place where the cloth winds up. The only exposed parts, you might say, are those between the warp and the cloth, everything else is out of sight or cased in. Then, too, this machine has been completely electrified, which has done away with a good many parts and removed the noise. With parts reduced to a minimum you can readily understand that the cost of upkeep of this loom is nothing compared to the old style looms.

Supt.: Well, I guess it is no use for me to ask you how it works. All I can do is marvel at the results. I would like to ask a few questions about your system though. How do your weavers and fixers work?

P.M.: The weavers, of which there are very few, as we are now running 300 looms to the weaver, are provided with a power-driven skate the same as the spinners. Through the use of automatic signals they know what looms in their section are stopped and get to them very quickly. We have a great many warps that run right through without a stop, so you can see that weaving is not so difficult under these conditions. The fixers work on the same number of looms in much the same manner.

Supt.: How do you change your warps?

P.M.: When a warp runs out the weaver puts up a signal, and the warp man comes to the loom and by means of a signal calls for the warp for this loom from the tieing machines to be sent down on the track over the alley where the loom is. In about a minute, down comes the warp. By that time he has the old warp cut out. He then puts the new warp in and the empty beam and lease up on the track, and by pulling a string reverses the motor on the trolley and back goes the empty beam and lease to the dress room. In about three minutes he again has the loom running with the harnesses properly

leveled and all adjustments made. The loom does not have to be cleaned as the warp runs out, for it is kept thoroughly cleaned by the cleaning gang. As for oiling, the main bearings and others requiring lots of oil are kept supplied by a force feed lubricating system that uses the oil over and over. The other parts are oiled at stated intervals by regular oilers. These intervals have been considerably lengthened, however, by the use of special oils and greases.

Supt.: How are the bobbins cleaned and returned?

P.M.: Each loom cleans its own bobbins as it throws them out, and they go back to the spinning room through a pipe.

Supt.: How is the cloth removed?

P.M.: This is done by one man who follows a regular schedule, each loom being doffed just once during the warp. Cloth is sent to the shipping room on overhead tracks.

Supt.: Well, I guess I am satisfied that your mill is way ahead of what mine was, and I will not take any more of your time. I would not have believed that things could have changed so in just 25 years but that proves that the world does not stand still. Goodbye, and I thank you very much.

Carolina Mill Men Meet at Asheville

Carolina cotton manufacturers gathered in Asheville, N. C., on July 3rd and 4th for a session of constructive business discussion and good fellowship. The simultaneous annual conventions of the Cotton Manufacturers' Association of North Carolina and of the Cotton Manufacturers' Association of South Carolina furnished the occasion. Both meetings were very well attended, with unusual interest manifested in the helpful convention sessions.

The North Carolina Meeting

was opened on Friday morning, July 3rd, by President E. C. Dwelle, who is vice-president of the Chadwick-Hoskins Company, of Charlotte. The sessions of this association were held at the Grove Park Inn.

After calling upon E. G. Wilson for the invocation, President Dwelle presented to the meeting Hon. Angus W. McLean, Governor of North Carolina, who delivered an earnest address, which was well received. Governor McLean, in recalling the wonderful strides made by the state, for which it has become famous, at the same time pointed out that the government operated on antiquated lines and with outgrown statutes. His efforts and aims in placing the state government upon a definitely progressive business basis were outlined briefly, and he asked for the active cooperation and sympathy of the cotton manufacturers in his endeavors. He referred particularly to the executive budget system being effected in the state, and pointed out the possibilities and results that are anticipated from its operation.

In conclusion, the governor called the cotton manufacturers rather to task for their apparent general lack of interest in the conduct of state affairs, declaring that their interests demanded of them an equal responsibility of an active, earnest constructive cooperation in the proper conduct of the business of the state.

The next speaker was John E. Edgerton, president of the National Association of Manufacturers, and also president of the Lebanon (Tenn.) Woolen Mills, whose address on subjects pertaining to the manufacturing executive was especially interesting to those present. After the appointment of committees, President Dwelle next introduced W. H. Gatchell, assistant to vice-president, Southern Railway System, Washington, D. C., who briefly talked to the manufacturers with reference to shipping, especially concerning care in baling goods. The meeting was adjourned following Mr. Gatchell's talk, and there was no session in the afternoon, the time being given over to a golf tournament in charge of W. H. Willard, of Charlotte.

On Friday evening, at 8 o'clock, the annual banquet of the convention was held, with President Dwelle as toastmaster. Music was furnished by the Goodfellows Club quartette, of Charlotte. William J. Vereen, of Moultrie, Ga., president of the American Cotton Manufacturers' Association, and George S. Harris, of Atlanta, president of the Cotton Manufacturers' Association of Georgia, were honor guests, and upon being formally presented by President Dwelle at the banquet, brought greetings from their respective organizations to the North Carolina manufacturers. The address of the evening was delivered by Dr. Howard Rondthaler, president of Salem College, Winston-Salem, N. C. Presentation of prizes for the golf tournament, and also for the ladies' putting contest, held on Friday morning, and drawing for attendance prizes, which were donated by mill members and consisted of their manufactured products, concluded the occasion.

The Saturday morning session, July 4th, was strictly executive in nature, and comprised the business meeting. The address of the president was read at this session by Mr. Dwelle. While declaring that economy plans on the part of the government were especially encouraging, Mr. Dwelle referred to "the ever increasing cycle of state and local taxes that have now reached the point where the burden is almost beyond our ability to carry." He said, "we do not want to appear as being opposed to further progress in our state, and we have uniformly supported large educational improvements of all kinds," but, on the other hand, "too rapid expansion encourages extravagance, and we believe it better to check up and expand more normally than in the last few years."

Mr. Dwelle called attention to the Southern Mill Rules of 1925. In the old Carolina mill rules, he pointed out, it was provided that replacement must be made in ten days, and the number of times a shipper could replace was not limited. "At the end of the season, when frequently large premiums were paid for certain kinds of cotton, it was found impossible to force delivery for such cotton as had been sold for delivery from the old crop," he explained. The Southern Mill Rules of 1925, he said, give twenty days to replace rejections after report of arbitration, but no second replacement will be allowed. "We also give the buyer the right at the expiration of twenty days, if the cotton has not been replaced, to either cancel the contract or buy it in at the market price, charging the seller with the difference plus ¼ cent per pound penalty."

After commending the work of the traffic department,

Mr. Dwelle declared that "the one outstanding thing that I want to bring to your attention is the vital need at this time of reliable information on which to base our operations. Industry in general is today relying more than ever upon statistics and, except on our raw materials, our American mills are practically without comprehensive information affecting the industry. We need to know the volume of movement in all kinds of cotton goods and the relation of production and stocks to sales and shipments. We believe with such information available to all mills generally, we could intelligently operate our plants, and I am glad to report that a number of our leading mill men are doing some valuable work in this connection. The textile industry is one of America's basic industries, but under present conditions it is perhaps operated more in the dark than any of our other great industries. We have felt this was such an important matter that we are making it the keynote of our meeting this year, and I hope that as a result of the discussion here today, some definite working plan will be worked out for collecting and disseminating statistics as to stocks, production, orders, etc., of various yarns and fabrics with a view to stabilizing conditions in the industry."

Mr. Dwelle referred to the success of this practice in the steel industry, and to the attitude of the Supreme Court as to the rights of trade associations gathering and publishing such statistics, and stated that "without doubt we are now in a better position to know what we can do than ever before," and reminded the manufacturers of the active cooperation being given such movements by Secretary Hoover and the Department of Commerce.

Discussion on this subject was conducted by Mr. Vereen, who is taking the leading part in the movement. The North Carolina men endorsed the plan and pledged their cooperation.

After the reports of the secretary and standing committees, the election of officers was held. S. F. Patterson, of Roanoke Rapids, was made president; J. M. Gamewell, of Lexington, first vice-president; C. G. Hill, of Winston-Salem, second vice-president; and Thos. H. Webb, of Concord, was the new third vice-president. The executive committee was not chosen. This was the concluding session of the convention.

The South Carolina Convention

was held at the Kenilworth Inn. The first session was held on Friday evening, July 3rd, and was of an executive nature. On Saturday morning, July 4th, President J. C. Evins, of Spartanburg, presented Hon. Christie Benet, of Columbia, S. C., who delivered a very forceful talk, with reference to constitutional law and amendments. He discussed law enforcement and the solution of the tax problem, declaring these were the two vital points in South Carolina today. After Mr. Benet's address, the meeting was turned into executive session. At the conclusion of the deliberations, the election of officers was held. Mr. Evins, who is president of the Clifton (S. C.) Manufacturing Company, was re-elected president; Allen J. Graham, of Greenville, was made vice-president to succeed S. M. Beattie. The following executive committee was named: J. C. Plonk, of Hickory, N. C.; T. M. Marchant, of Greenville; Leonard S. Little, of Lyman; W. C. Hamrick, of Gaffney; Marshall Orr, of Anderson; Alex Long, of Rock Hill; E. Nicholson, of Union, and R. B. Pitts, of Camden. S. W. Converse is secretary-treasurer.

A New Line of Iron Body Gate Valves.

The Lunkenheimer Company of Cincinnati, Ohio, manufacturers of valves and engineering appliances, have just released to the market an entirely new line of iron body gate valves, containing many structural features which undoubtedly will appeal to valve users.

The valves are made in two types—stationary stem, inside screw, and rising stem, outside screw and yoke. Either type may be had in the standard pattern for 125 pounds working steam pressure or in the extra heavy pattern for 250 pounds, total temperature being 450 degrees F. They are finished in all standard sizes.

The manufacturers claim that the material employed are of a fabrication particularly adapted for valve service, not alone for high pressures and temperatures but also for the stresses incident to expansion and contraction and pipe strains.

Face to face dimension of the flange and valves are what is generally accepted by the trade as "Standard." Therefore replacements can be made without alteration of pipe lines.

This new line of gate valves is regularly furnished with the body, bonnet, yoke and gland of iron, and the stem, disc, faces, seats and yoke, gland and stuffing box bushings of bronze.

For handling cyanides, creosote, alkaline solutions and other fluids which attack bronze but not iron, the "All-Iron" type of the Standard Pattern is furnished. The standard pattern is also made in the quick-operating type with lever control.

The Lunkenheimer Company have recently issued an attractive brochure portraying their new line. A copy may be had upon application.

Randolph Crompton has become associated with the Hopedale Manufacturing Company, Milford, Mass., as vice-president and director and general manager of the new box-loom and fancy loom department of the company, it is announced. Mr. Crompton was one of the original inventors of the application of automatic filling-change devices to fancy looms. He was formerly connected with the Crompton Loom Works, the Crompton & Knowles Loom Works, the Crompton-Thayer Company, and the Mason Machine Works. The Hopedale Manufacturing Company announce also that they have acquired the patents and patents covering the worsted and woolen looms formerly made by J. J. McClockey, of Collinswood, N. H., and the patents and patterns covering silk looms formerly manufactured by the Mason Machine Works.

The 1925 edition of the Year Book and Cotton Manufacturers Manual has just been issued by the National Association of Cotton Manufacturers, 80 Federal Street, Boston, Mass. This is the eighth volume of the series, and is larger and contains much material not found in the previous editions. In addition a compilation of fundamental statistics relating to cotton and cotton manufacturing is included, which contains much not found elsewhere as well as adaptations of authoritative figures. The technical section contains many standard reference tables, as well as other technical information of value.

Scientific Trends with a Textile Slant

The Prime Mover.

Of all the factors in modern business life the telephone stands preeminent. Its growth is a significant tribute to this fact; its solidarity and universal employment as the means to unified control of isolated departments, projects and contacts again testify to its indispensability in the modern scheme of doing things.

"In commerce, the old way merchant is being affected by three hard propositions, viz., the chain store, the mail order house and the house-to-house canvasser." (Thus says an oracle.)

What about it? Undoubtedly we must discover means of competitive selling in close-margin markets. This will come from the proper application of a certain right principle, a principle which has been inseparably linked with achievement and success throughout all the ages.

Let us study its details and its examples.

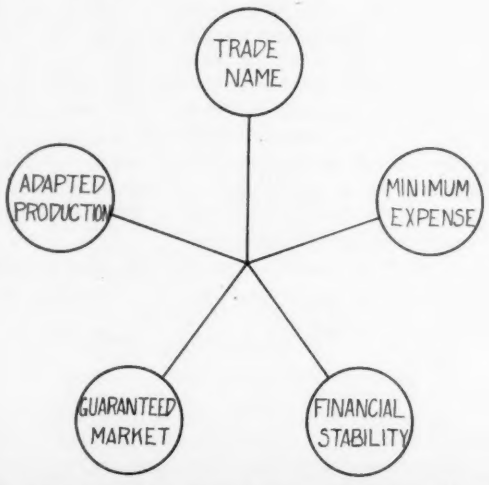
It hardly needs the masterly advertising it sponsors to call attention to its relative advantage in such situations as that of toll call versus personal call; any efficient executive studying his opportunity can cite a thousand special uses.

Perhaps its chief hold on us lies in the spirit of service which is the esprit-de-corps of every department of the whole tremendous system. Consisting as does telephony fundamentally of a technique of myriads of "little things," its esprit also is a vast detailed fabric of little loyalties bound up into a tremendous ensemble of perfect performance as intricate—and as dependable—as one of its own *B Boards*. We see this in a vast exchange "cut over" in an incredably few hours, again in the valiant stand against the forces of public disaster made by some lone operator, and again tremendously in the devotion to ideals of duty displayed by such an epic as the rehabilitation of Boston's most vital exchange that, burning, threatened to paralyze the business heart of the city.

Of all the ideals of service exemplified in modern life, industry may claim, in the spirit of the whole telephone organization, its finest example.

Style Service.

Service of another kind, reflecting advantages on both customer and producer, is the outgrowth of effort on the part of the produce merchant to keep up a definite style service in the form of a bureau of research, analysis or history. Such activity may well become the most influential intangible of the business, be more potent to its success than "good-will."

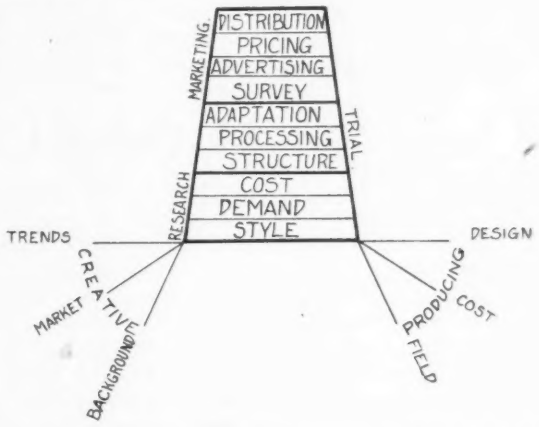


The Advantages that Come from Style-Service Activities.

This type of service is safety insurance. Far-seeing producers are bound to give less and less weight to self-induced attempts to influence style, just as the best creative houses have always stood on their own feet in this particular. Whatever contribution service and research can make to the problem will be of ever greater value as the race narrows down to the survival of the fittest.

The Service Laboratory.

Mills which are constantly on the alert for entrance into new markets have a strong ally in the branch of organization that provides for experimental and semi-works scale production. Designed primarily for the development of new work they are adaptable to many small commissions, handling profitably what would represent a loss if thrust into regular production departments.



The Sources of Information and Process of Application of Service-Laboratory Activities.

Such a department, properly organized, offers a producing company its chief means of flexibility in adaptation to market needs. It must possess within its group the logical elements necessary to get creative and productive results. Reference to the diagrams will recall these in the relation which they bear to normal production.

Order Facilities.

Some ingenuous devices have been fashioned around the adding to and holding the customer list. These, much more than personal salesmanship contact, have been productive of large-volume sales of merchandise. Their keynote is service, and it is upon the principle of service in facilitating the contact of the customer with the operation of making the purchase that the best success is obtained.

The "twenty-four hour shipment service" of the mail-order people is one. Another is the arrangement a large retail house makes with Post Offices at its divisional shipping points by means of which orders arriving in the mail reach them every hour, making it unnecessary for the customer to use "Special Delivery" mail.

Behind all such methods lies the appeal to the customer's sense of having *his* interests looked out for—made para-

mount. It is an appeal far more valuable in its returns than the expense of making it possible to the customer ever can total.

Viewed in another way, it indicates a rather high state of organization on the part of the seller and this makes manifest to the buyer a much better than average chance that he is going to be satisfied with his purchase. No single branch of business can afford to neglect this opportunity—from the littlest producer of machine parts in the Bay State to the biggest cotton mill group in the Piedmont.

Employee Welfare.

Some organizations call their welfare departments "Service Departments." Properly included therein are the activities and carriers of group insurance, health and hazard, general welfare and efficiency, recreation, pensions and unemployment insurance.

A certain danger of ineffectiveness lies in the relation of the size of such activities; and their dovetailing into the general management, and the business as a whole. Growth and perfection of such laudable efforts are to be hoped for—but the total magnitude and total function should be dependent at all times, upon the actual investment value of the business, plant, stock and money.

Service, or welfare, as a dream, a Frankenstein, or a subject of business and market conditions is certainly worse than no activity of the kind whatsoever—as such it destroys confidence and breeds uneasiness. It should exist truly for the service and upbuilding of sound conditions internally in the organization. Otherwise, the tail wags the dog.

Institutional.

One hope of every founder of a great business is, that that business shall endure. What a responsibility that lays on our stewardship. In most cases the founders have possessed the vision and the ideals—but they have had to pass the torch on to us for the completion of the plan.

Greed is the ill-famed parent of shortsightedness, and its curse is unrealized hope. The way of permanence lies along the path of service only. Gibbon traced this lesson as it flashed forth from the ancient kingdom. All the course of history is dotted with examples, and for our modern era every successful business career has driven home the truth, from Pasteur to Henry Ford. They satisfied a deep-seated human need—fame and fortune resulted as a natural sequence.

It seems expedient, therefore, in surveying the field of opportunity in any line of manufacturing, to work on the basic principle of admitting only such things as the consumer longs for—not what you *prefer* to make for him. A goodly number of textile people have met success already in that way.

The reason? A very sound one indeed. Look up the advice to "him who would be chief among you."

Machine Calico Printing

BY WILLIAM B. NANSON.

Alizarine blue is found in the market in different forms; some are insoluble and some are soluble in water. The compounds with bisulphite are most usually employed: Alizarine Blue S, and SRX, and SB in powder and S2R in paste form. These are extremely soluble in cold water and may be added to the thickening directly without any previous dissolving. The Anthracene blues are just the same as the Alizarine blues and can be applied in just the same way. The following recipes are given for Alizarine S, but will do for all others of the same class:

Alizarine Blue I (Chrome)

50 grams Alizarine Blue S powder
650 grams Starch paste
150 grams Gum tragacanth 4 per cent
150 grams Acetate of chrome 25 degrees Tw.

1000

Alizarine Blue II (Zinc)

60 grams Alizarine blue S.
820 grams Starch paste
160 grams Zinc sulphate ($ZnSO_4 7H_2O$)

1000

Dissolve in the cold.

Alizarine Blue III (With nickel)

50 grams Alizarine Blue S
820 grams Starch paste
120 grams Acetate of Nickel 15 degrees Tw.

1000

Alizarine Blue IV (With copper)

60 grams Alizarine Blue S
820 grams Starch paste
120 grams Acetate of Copper

Print on oiled cloth, steam, wash and soap.

The chromium and copper lakes of Alizarine blue are much the fastest altogether; the copper lake is much the fastest in light colors, especially to light. Though the nickel and zinc lakes are much the more pleasing in tone, they lack the light-resisting qualities of the copper and chrome; in fact they fade to grey with a blue color in a fortnight of sunlight or exposure.

Alizarine blue is used largely in the make-up of such colors as brown, grey, mode, all shades of olive, and other tertiary colors along with Alizarine claret and all mordant yellows.

Phenocyanine, Corein, Philochromine, Alizarine cyanines, Alizarine black, Gallophenine, Chromoglaucine, and Gallo Navy Blue are all applied in the same way as Alizarine Blue S. It is true that the percentage of color may vary in printing different shades of the color, and that the proportions of metallic oxide and amount of mordant have to be altered for each depth of shade, but in most respects and in a general way, *all* the mordant blues may be made up on the same lines as the Alizarine Blue S. Chromium acetate is the main mordant for this group.

Blues which are insoluble, i.e., mordant blues like Gallamine blues, may be rendered soluble by steeping for a length of time in bisulphite of soda, thus:

Gallamine Blue.

40 grams Gallamine Blue
50 grams water
40 grams Bisulphite of soda at 66 degrees Tw.

This must stand two or three days, and then add:

770 grams Starch paste
100 grams Acetate of chrome, 25 degrees Tw.

Print on oiled cloth, steam one hour, wash and soap.

There are put on the market today colors which are called blotch work. These are leuco compounds and are derivatives of Gallocyanine. They make excellent colors and are called "Modern violet," "Modern blue 1900," etc. These may be fixed either by chromium or tannic acid mordants, and may be shaded by any of the basic colors. Both mordants may be used in combination with each other together, especially in the case of the Chrome violet blues (of Geigy). Hydrosulphite of soda can also be added beneficially. The chromium compounds or colors are somewhat red in shade and the tannic acid blues them down effectively. An example of this class of color is as follows:

Dark Blue (Blotch)

3,500 grams Chrome violet blue (Geigy)
1,500 grams Setoglaucine blue (Geigy)
8,000 grams Acetic acid 9 degrees Tw.
2,000 grams Acetin
5,500 grams Water
10,000 grams Starch
4,500 grams Tragacanth thickening 5 per cent
300 grams Cottonseed oil
3,500 grams 50 per cent solution of hydrosulphite NF
Boil, cool and add
3,000 grams Alizarine oil, 25 per cent
10,000 grams Tannic acid sol. 1:1 (50 per cent)
12,000 grams Acetate of Chrome 15 degrees Tw.

104,300 = 100,000 grams after boiling.

Print on oiled cloth, steam, allow to lie a short time, then wash and soap.

Phenocyanine blues are mixed with Alizarine yellows to form very bright shades of olives and these in turn may be modified in color by any of the mordant colors. Phenocyanines themselves are leuco bodies, and they are best allowed to lie for some time before they are washed and after steaming to fasten them or they may be lightly "chromed"—this to oxidize them, i.e., if the other colors will permit of it.

Many of the other violets and blues that are printed by the same route or in the same manner as the Alizarine Blue S, such as the chrome violet, Gallo navy blue, Chrome Azurol S and Gallozol blue, may be dyed in the same manner. For instance:

Chrome Violet.

40 grams Chrome violet (Geigy)
150 grams Water
60 grams Acetic acid 6 degrees Tw.
600 grams Starch, tragacanth thickening
30 grams Acetin
120 grams Acetate of chrome 18 degrees Tw.
Print, steam and wash.

Chrome Azurol S

40 grams Chrome Azurol S (Geigy)
120 grams Water
80 grams Acetic Acid 6 degrees Tw.
600 grams Starch, tragacanth thickening
160 grams Acetate of Chrome 18 degrees Tw.
Print, steam and wash.

Gallo Navy Blue.

50 grams Gallo Navy Blue RD conc. paste (Bayer)
170 grams Water
650 grams Starch, tragacanth thickening
30 grams Acetic acid 6 degrees Tw.
100 grams Acetate of chrome 32 degrees Tw.
Print, steam and wash.

Gallo Navy Blue, used alone or mixed with other mordant colors, can be used for both "peg" work and "blotch" in other steam styles. Gallozol Blue is made the same way as the chrome violet and the chrome azurol, and it may be as well to say here that the chrome azurol may be mixed in all proportions with either the chrome violet or with the calico yellow, to make all shades of purple or olive.

The Alizarine, Anthracene, and the Calico yellows run from a greenish sulphur color to a deep red orange. They combine with chromium, tin, and aluminum mordants to form lakes, and though the chromium lakes are the fastest, they are not the brightest by any means. The Alizarine yellows, in the mixed shades of olive and mode, especially, have fully displaced the vegetable printing colors.

Alizarine Yellow I

630 grams Starch paste
200 grams Alizarine yellow GG paste or R paste
100 grams Nitro-acetate of Chrome 38 degrees Tw.
50 grams Acetate of Lime 23 deg. Tw. (Optional)
20 grams Cottonseed oil.

Alizarine Yellow II

200 grams Calico yellow FFE 20 per cent paste (Geigy)
40 grams Water
660 grams Thick starch paste
Boil until the yellow is all dissolved, then cool and add
100 grams Acetate of Chrome 18 degrees Tw.

Alizarine Yellow III (Very brilliant)

40 grams Anthracine yellow 100 per cent (Geigy)
40 grams Acetic acid 9 degrees Tw.
80 grams Water
700 grams Starch tragacanth paste
100 grams Acetate of Alumina 15 degrees Tw.
40 grams Oxalate of Tin.

Alizarine greens include Carulein, Alizarine Green and Alizarine Viridine, all of which make fast printing colors with chrome, and which are used not only as constituents of a great number of compound colors, but as self colors, too.

Carulein Olive I

200 grams Carulein S paste (bisulphite compound)
150 grams Water
500 grams Thick starch tragacanth paste
150 grams Acetate of Chrome

Carulein Olive II

50 grams Carulein conc. powder
150 grams Water
100 grams Bisulphite of soda 66 degrees Tw.
Allow this to act two or three days, then add
550 grams Thick starch tragacanth paste
150 grams Acetate of chrome 32 degrees Tw.

Alizarine Green S

150 grams Alizarine Green S (paste)
660 grams Starch tragacanth paste
150 grams Acetate of Chrome 20 degrees Tw.
40 grams Cottonseed oil.

Bisulphite of chrome and nickel may be used as mordants.

Alizarine Viridine

40 grams Alizarine viridine (powder) (Bayer)
200 grams Water
100 grams Acetic acid 9 degrees Tw.
120 grams Starch
400 grams Water
20 grams Cottonseed oil
Boil, cool and add
120 grams Acetate of Chrome 30 degrees Tw.

1000

The brightest and purest green of its class is Alizarine Viridine. Carulein being of a deep olive and Alizarine Green running to a dull blue, particularly in the light shades. They are all printed on oiled cloth and steamed the same as the reds.

Many of these recipes, in fact most of them, are copies from other authors so far as the recipes are concerned, because it was more correct, and easier to do, and it fully interpreted the ideas of the writer in every way, and moreover, corroborated what he had to say.

Dinitroso-resorcin is a coloring matter that yields brown and green shades that are very fast to light and soap. It is sold usually as Resorcin Green or Solid Green O, and sometimes as Fast Myrtle, but it is easily prepared in the color shop as follows:

Dinitroso-resorcin 25 per cent

500 grams Finely ground resorcin $C_6H_4(OH)_2$
650 grams Sodium nitrite 94 per cent $NaNO_2$
3,000 grams Water
Dissolve and add
3,000 grams Ice; then run in gradually
700 grams Sulphuric acid 123 degrees Tw.

Keep stirring this all the time and add fresh ice, if it is necessary to keep the temperature down. The precipitate, which will fall out, is the dinitroso product. This precipitate must be washed out well and decanted to 3,050 grams, which is the same as 25 per cent paste.

The foregoing yields myrtle greens with iron mordants; and dark browns with alkaline copper mordants and chrome mordants. It is usual, in fact general, to use iron and chromium lakes, as the latter forms a very useful dark brown blotch with ordinary steam work and a large variety of lighter browns, fawns and modes if it is reduced in strength. It is printed on either oiled or clear cloth, there is not much difference between the two shades and either way will do. Try it!

Green Dinistroso-Resorcin.

{100 grams Dinistroso-Resorcin 25 per cent
{100 grams Water
{100 grams Ammonia 25 per cent.
Dissolve and add in the cold
25 grams Glycerin
580 grams Starch tragacanth paste
95 grams Potassium Ferrocyanide (finely ground)

Stir up well until the ferrocyanide is dissolved, then strain and print.

Brown Dinistroso-Resorcin (with chrome)

{150 grams Dinistroso-Resorcin 25 per cent
{100 grams Potassium sulphite 70 degrees Tw.
250 grams Gum tragacanth thickening 5 per cent
350 grams Starch paste (acid)
150 grams Acetate of Chrome 25 degrees Tw.

1000

Print, steam, and open soap at 80 to 90 degrees C.

Dinistroso-Resorcin brown gives a full cutch brown at full strength, and may be shaded down to light shades, 1 : 10 or lighter, which give handsome colors quite fast to light and soap.

There are two other nitroso compounds—Chrome Bistre N.O. and Viridone F.E.—on the market. Chrome Bistre gives fine shades with chrome mordants, and Viridone gives better shades of green with iron mordants than Dinitroso-Resorcin can give. It (Viridone) also gives fine shades of khaki with chrome mordants that are useful and fast.

The following show these:

Chrome Bistre N.O.

60 grams Chrome Bistre N.O.
340 grams Water
500 grams Starch tragacanth thickening
100 grams Acetate of Chrome 32 degrees Tw.

1000

Viridone F.E.

60 grams Viridone F.E.
255 grams Water
50 grams Acetic acid 9 degrees Tw.
470 grams Starch tragacanth thickening
30 grams Glycerin
15 grams Olive oil
80 grams Pyrolignite of iron 15 degrees Tw.
40 grams Sulpho-cyanide of iron 15 degrees Tw.
10 grams Bisulphite of soda 72 degrees Tw.

1000

Anthracene brown is a good useful dark brown. It is used alone as a self-color, but more often it is used for toning down (or up) compound colors; it produces very fast lakes with both aluminum and chromium mordants. With aluminum the lake is of a reddish color; with chromium, as is the case with most chomium colors, it is yellower and duller, but is faster to all influences, but is mostly used on this account more than any other.

Anthacene Brown I

70 grams Anthacene Brown G 20 per cent (B.A.S.F.)
20 grams Acetic acid, 9 degrees Tw.
760 grams Starch paste
150 grams Acetate of chrome 15 per cent

1000

Anthracene Brown II

70 grams Anthracene Brown G 20 per cent
20 grams Acetic acid
720 grams Starch paste
150 grams Acetate of Alumina
40 grams Oxalate of Tin

1000

The tin may be omitted, but it helps to brighten the color. This color (Anthracene Brown) yields a fine line of "mode" shades running from dark brown to light buff if mixed with Quercitron bark extract or Persian berry extract.

Anthracene Brown A.P. B. (Dark)

150 grams Anthracene Brown G, 20 per cent
15 grams Persian berry extract 48 degrees Tw
560 grams Starch tragacanth paste
250 grams Acetate of Chrome 15 degrees Tw.
25 grams Acetate of lime 23 degrees Tw.

1000

Print, steam, wash and soap.

The Anthracene browns can be mixed in any proportions with the other Alizarine colors to form all kinds of colors that are fast to light and soaping. Nearly all colors in greys, modes, fawns, and other mode and olive shades can be produced by the intermixture of a few standard colors in this class, in certain proportions, and of all these Anthracene Brown is by reason of its fastness, etc., the best to use where possible, as it affords a background without altering its character to the extent that a black or a blue would. There are other Alizarines besides these that are useful in a printworks.

The Application of the Natural Dyestuffs.

These had greatly diminished in use until during the time of the great war they received a sudden spurt, but now

they are largely out of the running until there are only—and these in a diminishing ratio—about five remaining and these are: Quercitron bark, Persian berries, Catechu, Logwood and Peachwood.

Persian Berry Extract I (Chrome)

120 grams Starch
60 grams Acetic acid 9 degrees Tw.
570 grams Water (or 530 grams Water and 40 grams Oil)
150 grams Persian Berry Extract 48 degrees Tw.
Boil, cool, and add
100 grams Acetate of chrome 25 degrees Tw.

1000

Persian Berry Extract II (Chrome and Tin)
(A quiet lemon shade)

150 grams Persian Berry Extract 48 degrees Tw.
500 grams Water
60 grams Acetic acid
120 grams Starch
50 grams Cottonseed oil
Boil, cool and add
90 grams Citrate of Tin
30 grams Acetate of chrome 25 degrees Tw.

Steam Orange (Berry, Alumina and Tin)

200 grams Persian Berry Extract 48 degrees Tw.
455 grams Water
75 grams Acetic acid 9 degrees Tw.
120 grams Starch
50 grams Oil
Boil, turn off steam, and add, while hot,
25 grams Alum (finely ground)
Cool and add
25 grams Acetate of soda
50 grams Tin crystals

If it is shaded with a little Alizarine blue, as follows, Persian Berry gives an old gold color:

Old Gold

100 grams Persian Berry Extract 48 degrees Tw.
1½ grams Alizarine Blue S
825 grams Starch tragacanth paste
75 grams Acetate of chrome 25 degrees Tw.

1000

Print and steam the colors as usual.

The coloring matter as far as printing is concerned is the same as for Persian berries and it is handled the same, the various shades of brown and yellow being obtained from the same mordants, but though they are duller and of course cheaper they are quite as fast in every way. Their chief use is in making olives and browns for which use they may be mixed either with the basic anilines or with the steam Alizarine colors.

Peachwood is a red coloring matter that gives red shades (bright) with tin mordants, dull reds of a blue shade with aluminum and dull purple with a mixed mordant of iron and alum. They are not fast and with the exception of the latter are of no practical value. A purple that is sometimes used may be made up as follows:

Peachwood Paste

450 grams Peachwood extract 9 degrees Tw.
325 grams Water
80 grams Starch
40 grams British gum
25 grams Cottonseed oil
Boil and add
5 grams Potassium ferrocyanide (finely ground)
Cool and add
75 grams Nitrate of Alumina

1000

If the foregoing is mixed with Alizarine chrome reds and a little Logwood black, it makes cheap maroons and clarets. It is not fast, but cheap, and such mixtures are sometimes used for this reason.

[This is the eighth of a series of articles on "Machine Calico Printing" by Mr. Nanson. The next will appear in an early issue.—The Editor.]

INTANGIBLES IN MANUFACTURING

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Frederick H. McDonald.

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What the Southern Mills are Doing

The Corley Mills, Inc., Cumberland, N. C., have been purchased by A. P. Thorpe, of Rocky Mount, N. C., who has acquired all of the company's properties. Clifton Corley was formerly president and manager of this plant.

Plans for a yarn mill at Ellenboro, N. C., are under way, according to a report. John Lumley, formerly connected with the Henrietta Mills, Caroleen, N. C., represented W. H. Belk, of Charlotte, at a meeting in Ellenboro recently with reference to this matter.

The Morven Cotton Mills, Durham, N. C., manufacturers of fancy dress goods, have sold their entire spinning equipment to C. L. Upchurch & Co., Athens, Ga. The weaving department will be continued, it is announced, yarns to be purchased.

Dilling Cotton Mills, Kings Mountain, N. C., have awarded to Parks-Cramer Company a contract for the installation of a Park-Spray humidifier system, including a new type of head, complete with regulation. This equipment is to be installed in the new weave mill being erected at this plant, it is stated.

A complete outfit for dyeing on beams, in indanthrene, sulphur or direct colors, has been purchased by the Catawba Spinning Company, Mount Holly, N. C., which recently announced plans to erect a dyehouse in connection with the yarn mill.

American Yarn & Processing Company, Mount Holly, N. C., plan to put into operation soon their new yarn mercerizing range, which, it is stated, will double the output of the plant.

Waldensian Weavers, Inc., Valdese, N. C., which are now producing bedspreads, draperies and other fancy products, are building an addition to the plant, which, when equipped, will double the capacity. F. Garrou, of Valdese, N. C., heads the company.

The Erlanger Cotton Mills, Lexington, N. C., the Boylston-Crown Mills and Crown Cotton Mills, Dalton, Ga., and the Geneva Cotton Mills, Geneva, Ala., are among the southern textile plants recently to install the Finnell System of electric scrubbing, it is announced.

James Cotton Mills, Maiden, N. C., have recently been overhauling the humidifier system at that plant, the Parks-Cramer Co., of Charlotte, N. C., performing this work.

Alexander Mfg. Co., Forest City, N. C., will, it is stated, install an additional number of looms.

American Cotton Mills, Bessemer City, N. C., have placed a contract with the Parks-Cramer Company, Charlotte, N. C., for the installation of a Turbo humidifier system. The Pinkney Mills, Inc., of Gastonia, N. C., recently gave contract for a Parks-Cramer high-duty humidifier system.

The Spencer Mills, Spindale, N. C., have installed 150 looms in their new weave shed, to produce voiles, sateens, etc.

A number of 46-inch Stafford fancy looms have been installed in the plant of The Horn Co., Spindale, N. C.

Gallivan Construction Co., Greenville, S. C., have been awarded the contract for the construction of a 50x100 foot extension to the warehouse at the Gluck Mills, Anderson, S. C. Standard warehouse construction will be used. The additional floor space will, for the present, be equipped for use as a cloth room. All machinery will be arranged for motor drive. Plans and specifications were drawn up by J. E. Sirrine & Co., engineers, Greenville, S. C.

Work on the $100,000 addition to the Martel Mills, at Valley Falls, near Spartanburg, S. C., is about completed, it is announced. Twenty-five houses for operatives have been finished. The additional spindles to be added in the extension will bring the total up to 20,000 spindles.

The addition to the office of the Monarch Mills, Monarch plant, Union, S. C., is completed. The structure is of red brick, with slate roof. Ten new houses for operatives will be erected at the Fort Mill Manufacturing Company, Fort Mill, S. C., the contract having been let to Knight & Daniel, of Greenville, S. C.

The Kenneth Cotton Mills, Walhalla, S. C., are adding 50 looms to their equipment.

The Dixie Cotton Mills, LaGrange, Ga., has let contract to the LaGrange Lumber & Supply Company for the construction of ten new modern tenant houses in the village.

Manchester Cotton Mills, Manchester, Ga., are erecting a new brick office building, and a new church in the village.

Mandeville Mills, Carrollton, Ga., have recently added ten new winders to their equipment, these being of Universal and Foster make.

The Echota Cotton Mills, Calhoun, Ga., will build a slasher room at their plant, which will be an extension, 100 x 100 feet, two stories in height.

Jefferson Mills, Jefferson, Ga., are equipping 50 of their looms with Stafford dobby heads.

Crystal Springs Bleachery Company, Chickamauga, Ga., will install a piece goods mercerizing plant with a daily capacity of 40,000 yards. D. A. Jewell is president of the company.

Construction work on a group of thirty houses has begun at the Schoolfield Division of the Riverside & Dan River Cotton Mills, Danville, Va. The houses will be occupied by operatives.

Improvements and extensions are being made at the plant of the Standard-Coosa-Thatcher Company, Chattanooga, Tenn., under the direction of J. E. Sirrine & Company, engineers, with office in Chattanooga. Contract for a new picker room has been awarded to J. S. Moudy & Company. This contract consists of the building of an additional story on the present cotton warehouse. The picking machinery now in Mill No. 2 of the company will be moved into the new room, thus allowing additional preparatory machinery to be installed in the space vacated in the mill. Also the new picker room will give better facilities for handling and opening cotton. Contract for new boilers has been awarded to Casey-Hedges 'Company. The stokers were purchased from the Combustion Engineering Company. The packing and shipping facilities for the mercerized yarn are now being increased by the addition of a second story to the shipping building. Among the other changes being made is additional machinery in the mercerizing plant.

Valley Mills, LaGrange, Ga., formerly the Valley Waste Mills, have acquired the plant of the Culp Manufacturing Company, overall manufacturers, Roanoke, Va., according to a report issued during the past month.

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The New England Mill Situation.

Curtailment of production averages over 20 per cent in the cotton mills of New England but now seems to be at its peak. There has been some improvement in the demand for goods during the past month and sales have been of a moderate character. Stocks of goods are at a minimum and are being kept down by the lack of profit in current quotations and the lack of desire to buy cotton at the present premiums when it can be avoided by closing some parts of the mills until conditions are better.

Sentiment in the trade is growing better steadily. This is due in large part to the feeling that the point has been turned from where public sentiment is against the mills. The general public in textile centers has learned a costly lesson, both from idleness of workers and from the results of legal contests made to determine the right of assessing boards to throw the burden of taxation on corporations. In Fall River, where a compromise was recently arrived at between mills and the city on the matter of excessive taxes, it cost over $139,000 for the city to defend itself against legal attacks, and it all resulted in the payment back to corporations of $1,000,000, plus the costs, to be paid by the city to the extent stated.

It has been firmly established in the minds of the present generation of city property owners at least, that if corporations care to make a contest before the courts, it can be readily shown that a custom of throwing the burden of taxation to mills and thus lessening the burdens of business building and home owners does not become law even if tolerated by mill managers. Property owners are realizing that properties of home owners have been valued moderately, not because of any exsiting right but because mill men have been willing to bear an added share if it is imposed without crushing enterprise.

The habit of over-taxing New England mills is one that is likely to be duplicated in the South and elsewhere if mill owners are not alive to the matter at its inception. In New England mill villages when the corporation owned a large part of the real estate including homes for the workers, it made little difference how the tax burden was distributed on particular properties. But the mills in this section have been steadily disposing of their outside properties, retaining only those absolutely required for manufacturing purposes. As much of the properties were sold to mill workers or to those in sympathy with mill ownership, and management, little serious trouble was encountered in the tax relations of citizens and mills until political needs of local parties began a bull baiting process, with the mills as the bull.

The percentage of mill investors in any of the New England cities is small compared with the total voting populations. Moreover, in recent years, the individual stockholders have had local properties at stake and have sought to protect them at the expense of the mills. So long as the mills could withstand competition little fault was found. When the mills began to resent the inordinate municipal taxation,—in some instances running to 6 per cent or more of the capital stock of the properties,—it was found that the public followed the politicians' ideas of forcing the mills to pay. It was the recognition of the strength of this spirit that provoked many of the mill managers into seeking relief from the courts.

As the cases shaped themselves, it was seen that small property owners would be hurt severely if a court was forced to lay down legal rules of assessment in given mill communities. This knowledge soon brought about a change of heart and when compromises were suggested, the men at the heads of the city government were quite ready to change their attitude toward taxation in general.

While there has been no marked change in the attitude of the general voting population toward the mills in matters of protective legislation, it is felt all through the section that a real change is under way. Today, it is declared, it would not be possible to enact another 48-hour law, such as is now on the books. There is little hope of repeal in that State, but an unofficial edict has gone forth that legislation of a similar character attempted in other states will be fought not only by the mills but by some of the public bodies that have wakened to the danger of pressing industries too hard.

Regional meetings of cotton manufacturers are being held throughout New England for the purpose of building up a more cohesive body among industrialists having a common interest to protect against the assaults of irresponsible people who have been using the New England field as a propagation center for movements to spread elsewhere in textile communities. These meetings have been largely of a social character on the surface but they have had the effect of broadening the work of associations and bringing textile manufacturers closer in matters of general concern.

In Rhode Island and Connecticut very strong state associations have come to the front among textile manufacturers and they are doing surprisingly good work in renewing the confidence of manufacturers in their own mills and instilling greater confidence among investors residing in the sections. The Eastern Connecticut Association recently held an exhibition that was a revelation to the people of the State. Indeed, in many respects it surprised the manufacturers themselves when they saw the great varieties of products produced. A Rhode Island association has planned for An Appreciation Week to be held in September, during which the people of that State will be given samples, through displays, of what the industries are doing, and will also be shown why the industries should be better appreciated.

One of the astonishing facts disclosed during the past month has been the ability of the leading wide sheeting, sheet, and pillow case mills of New England to meet and withstand competition. The wide sheeting market was one of the best divisions of the domestic cotton goods trade for years. But in the past several months production has been vastly increased and new products were being offered at long discounts and low net prices. It became necessary to revise prices recently, and leading lines were reduced to a basis of 48 cents for 10-4 bleached goods from 56 cents.

The leader in the reductions was a New England mill,—the Pepperell—of Maine. The Naumkeag mills of Salem, Mass., another large mill making Pequot sheets, also reduced. These two plants, the largest units in the business, not only met all competition, but in the order taking that followed they secured a full share of the business offered. Another group of northern mills in Utica, N. Y., also met the low price basis and has done a large business. One explanation is that actual costs of production in these plants is very low and compares favorably with other mills

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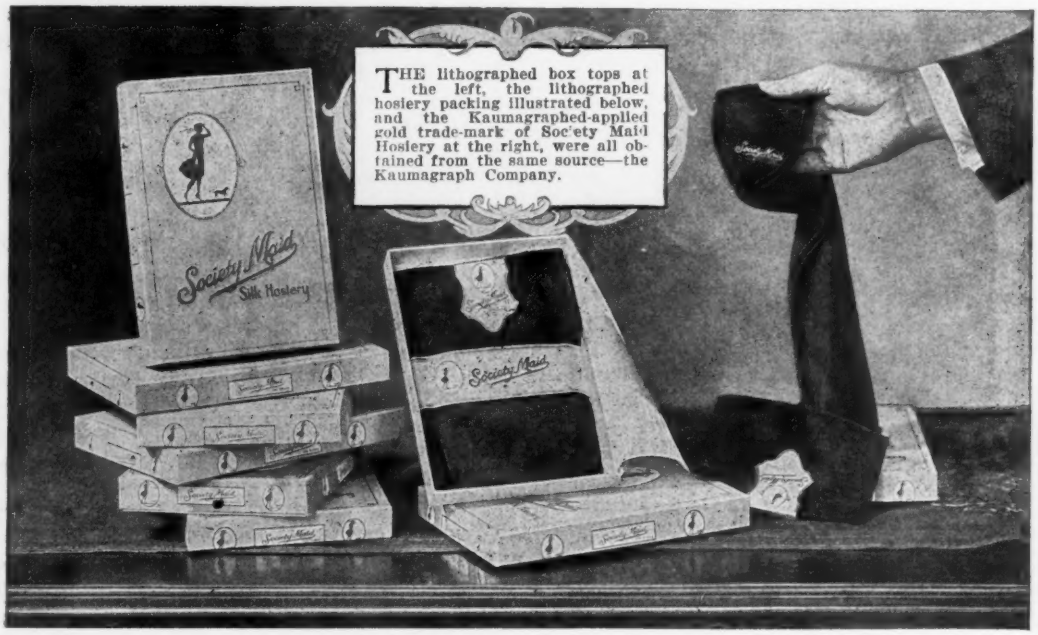
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having advantages in labor costs, running hours, etc. But the real explanation is stated to be that the goods have been merchandised vigorously and well and they have a consumer clientele that is not easily shaken.

One of the important changes going on in the New England industry is the wide diversion of machinery to fancy production. The markets are calling more and more for the styled products. Most of the mills are either engaged on rayon work or experimenting with the new fiber. Some of the new goods shown are of the most ornate character, consisting of dobby and Jacquard figured work, and many stripes, checks, and corded fancies. A very wide range of new color effects is obtainable with some of the new offerings of this fiber. The finishing plants are equipping to handle the goods in all the known methods.

Mills at Pawtucket, R. I., Putnam, Conn., and New Bedford, are engaged to more than half capacity on goods of this sort. Several of the gingham mills are offering new goods of rayon construction. In the Spring lines shown thus far by some of the best known gingham mills there are several numbers of rayon specialties from which wash fabrics buyers will be asked to make their choice as the selling season goes on.

There has also been a very great departure in the production of shirtings in mills that have been very conservative in their designs for decades past. At a recent opening by the mills of the Lonsdale Company in Rhode Island, one of the oldest established shirting plants in the country, the trade was astonished to find the wide variety of high quality cloths newly designed and styled, but still offered largely to meet the needs of the staple jobbing and manufacturing trades. Mills like the Amoskeag, Lorraine, Boston, Whittenton, and scores of others long established, are working on entirely new fabrics for the coming Spring season, as the trade is not calling freely enough for the staple lines to keep the machinery employed.

The job printing and finishing plants have been having a great deal of difficulty this season from the lack of business from converters of staple and semi-staple goods. Large corporations, such as the American at Fall River, have re-equipped their plants so that they handle all varieties of printing and finishing, and they have re-organized their selling and shipping facilities to make prompt deliveries of any new styles evolved in the course of a season. This puts the converters at a disadvantage as the large corporations sell close and can deliver more satisfactorily of the goods they make than is possible where reliance must be placed on the business handled by finishers. The latter are beginning to make many changes in equipment, especially to handle new rayon weaves.

The situation at Fall River is not any worse but idleness in a number of mills there is still complete. The difficulties of the Seaconnet Mills have not been adjusted. The affairs of the Arkwright Mills are being put into shape so that production will be resumed there on fine or fancy goods. Parts of the Flint, Chace, Stafford, and other large plants are wholly idle. A reduction of 10 per cent in woolen mill wages announced to become effective July 27 will not affect the cotton mills at present, as it merely puts the wool goods mills in line with the reduction accepted in cotton manufacturing centers several months ago.

The poor outlook for ginghams and many of the other staple fine colored cottons does not give promise of improvement in the immediate future but a great deal of business has been accepted by some mills on new cloths that will come on the markets in a few months.

It is the general opinion of New England financial factors that if the present crop prospects are maintained to harvest time there should be a substantial revival of demand as the Fall approaches. There is naturally a great deal of uncertainty expressed concerning cotton and at this time the feeling is that if the price is not on a lower basis, the distribution of cloths will suffer before the Spring season gets well underway. The chief anxiety is expressed in fine cotton goods circles where long staples of good quality command an unworkable premium. In the event of another scarcity of desirable staples from the new crop it is felt that business will suffer.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, La., July 18, 1925.

Since our last review, the general trend of the market has been upward, due to insufficient rains in the western belt, especially in the central and south-central portions of Texas. Although the market declined about one hundred points on the issuance of the Government Bureau Report on July 2nd, it had fully recovered this loss by July 8th, on account of the continued drouth in the Southwest, and now stands about 130 points above the level of June 10th, the date of our previous review.

Returns to the Government as of June 25th averaged the condition of the crop at 75.9 vs. 76.6 as of May 25th this year, 71.2 for June 25th, 1924, and the ten year average for June 25th of 74.

The estimated acreage as of June 25th was much larger than generally expected and was a surprise to everyone, being 46,448,000 acres. This is an increase of 8.9 per cent, or 3,807,000 acres over last year's previous record of 42,641,000 acres. Texas is credited with 18,237,000 acres this year vs. 17,706,000 last season.

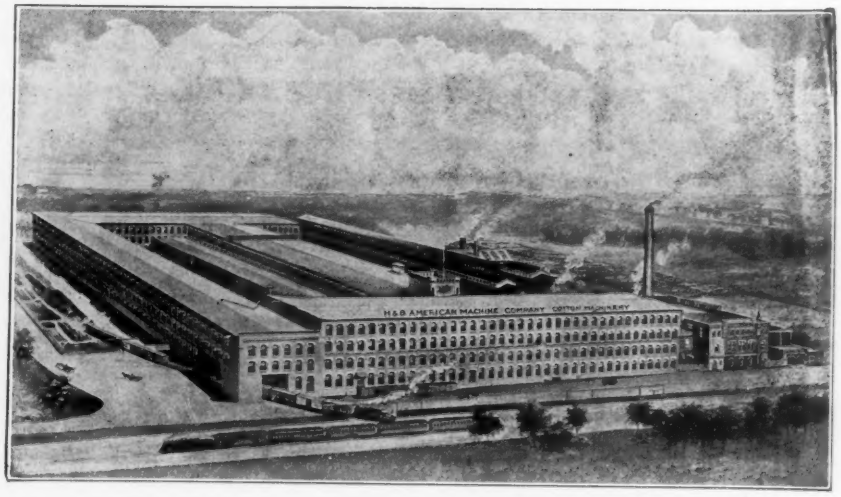
The condition of 75.9, on the above acreage, indicates a production of 14,339,000 bales, exclusive of linters, against 13,619,000 bales, exclusive of linters, last year.

The condition of 64 given for Texas, on an acreage of 18,237,000 acres, indicates a production of 4,273,000 bales vs. 4,952,000 bales last year. This is the lowest Texas condition for June 25th on record by five points, the previous low for Texas being 69 in 1919.

There has been great deterioration in central and south-central Texas since June 25th and from reports that are now coming in, the same conditions as exist in those sections are beginning to be manifested in the western and south-central portions of Oklahoma, and also in scattered counties throughout almost the entire State of Texas, with the possible exception of the northwestern portion. Unless good rains materialize in these regions in the immediate future, it is not likely that they will produce a crop even approximating last year's production.

The sustaining feature of the situation is the excellent progress being made in the other states, due largely to the unusually favorable weather conditions prevalent throughout most of the balance of the cotton belt and the success the farmers have attained in checking the advance of the boll weevil.

COTTON MACHINERY



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Accounts from the eastern belt indicate that the crop throughout that entire section is in a high state of cultivation and development. Late advices from North and South Carolina and Central and South Georgia are very encouraging, stating conditions in those sections are the best they have had at this time of the year for the past eight to ten years.

There is no doubt in the minds of the thoughtful that a large cotton crop this year is necessary, as almost the entire production of last year has been taken by the spinners of the world. While a crop of between fourteen and fifteen million bales would hardly be burdensome to the trade, it might possibly have a depressing effect on the market in general and the price of the raw material in particular.

To sum up the situation: to produce a large cotton crop this year, two things are necessary, viz.: good intermittent rains in the Southwest throughout the balance of the growing season and a continuance of weevil control in the Eastern Belt, which is likely to become increasingly difficult as the season advances, especially should the incessant rains they are now having continue.

We have just entered the most crucial period of the cotton growing season, when the plant is maturing, and all factors which go into the making of a crop will bear very close watching.

The Hughes Thread Mfg. Co., formerly located at Frankford, Philadelphia, Pa., but for the past two years at Vineland, N. J., recently opened New York offices at 318 Broadway. The entire sales distribution of their products will be under the direction of their new sales director, Charles Henry Hyde, well known in the thread business. For many years Mr. Hyde was an executive in charge of manufacturing of J. & P. Coats (R. I.), Inc., at Pawtucket, R. I. For the last four years he has been special factory representative of a thread plant at Springfield, Mass. The Hughes Thread Mfg. Co. contemplates an extension of its cotton and mercerized products to meet the requirements of the trade. A. W. Gregory, a cotton yarn broker with offices also at No. 318 Broadway, has represented the Hughes company for some years in the distribution of its glazed yarns for the insulated wire trade, a line that will be continued as heretofore.

An organization known as the Spectrum Club has been formed by members of the dyestuff fraternity in Chicago. It is intended that it shall follow more or less the lines of the Drysalters' Club in Boston and its membership is composed entirely of salesmen and managers of concerns handling dyestuffs, both manufacturers and jobbers. The present membership is about thirty, but it is expected that by the opening of the fall season this will be considerably increased.

Whitman and Brandt, Atlanta, Ga., have been appointed as distributors for the Lincoln Electric Company, of Cleveland, Ohio, in the state of Georgia. The Georgia distributors will carry the "Stable-Arc" welders and "Linc-Weld" motors in stock. Announcement by J. F. Lincoln, vice-president of the Lincoln company, states that this is in line with the plan of the company to provide immediate shipment of its products from various distributors throughout the country.

ERNEST FALLOWS has been made vice-president and general manager of the Western Reserve Cotton Mills Georgia Company, succeeding H. R. Whitehead, who has become agent of the Pepperell Manufacturing Company, Biddeford, Maine. The Georgia company has plants at Quitman and Millen, Ga.

R. A. LITTLEJOHN has succeeded J. L. Wofford as overseer of weaving at the Lydia Cotton Mills, Clinton, S. C. Mr. Wofford is now weaving overseer at the Union-Buffalo Mills Company plant, Buffalo, S. C.

SIDNEY HULL has become assistant superintendent at the Eureka Cotton Mills, Chester, S. C.

F. B. Ludwig, of Atlanta, Ga., has been appointed sales agent for Spier, Simmons & Co., Inc., 474-478 Greenwich St., New York City, manufactures of starches, soluble oils, softeners, sizing material, etc. This company manufactures "Dragon" elastic slasher size, with which, is is declared, no modification of the slasher formula is necessary, using 25 per cent of this material and 75 per cent of corn starch instead of 100 per cent corn starch. A greater elasticity and better binding quality is claimed for it.

"A Story of Big Facilities and Big. Jobs" is the title of an interesting booklet of photographs recently issued by the Dodge Manufacturing Corporation, Mishawaka, Ind., for the purpose of presenting a visualization of the Dodge Manufacturing facilities, and the organization's accomplishments in the special machinery field. Fifteen large photographs tell the story of the tremendous plant of the company, as well as showing some of the huge products turned out in the foundry, machine shops and steel shops.

Clinton Corn Syrup Refining Co., Clinton, Iowa, are distributing a valuable book of blanks for use as size test records. John M. Howarth, Peachtree Arcade, Atlanta, Ga., is the southern representative of the company.

A pamphlet entitled "Visible Losses," issued by the Toledo Scale Company, Toledo, Ohio, presents graphically the losses which may occur through inaccurate weighing of materials, and illustrates the line of scales manufactured by this company, which are applicable for industrial use.

Facts concerning electrical conduit form the subject of a leaflet just issued by the Youngstown Sheet & Tube Co., Youngstown, Ohio, which discusses the requirements of conduit, and the features of good materials. Specifications of their "Buckeye" rigid conduct and "Realflex" flexible steel armored cable are given.

A very useful little booklet giving precautions to be taken in the safe and economical use of the oxy-acetylene process has been issued by the Oxweld Acetylene Company, and copies may be secured upon request to any office of the company. It is explained that while the process is not particularly hazardous, there are common-sense precautions to be taken. The pamphlet provides a brief and very practical list of "Do's and Don't's" so that men may understand the precaution and care to exercise in the process of oxwelding and cutting and the installation and operation of the equipment, as well as the storage and handling of oxygen and acetylene cylinders.

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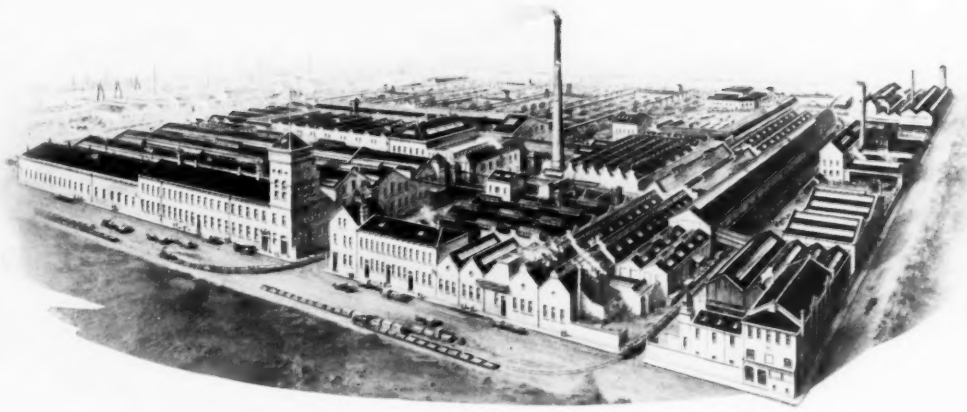

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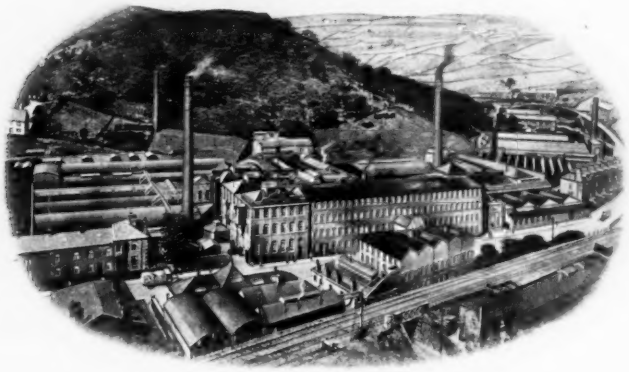

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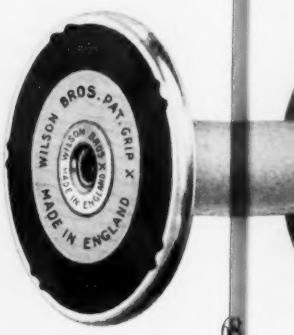

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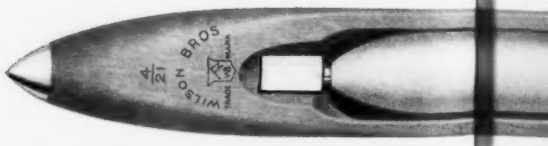

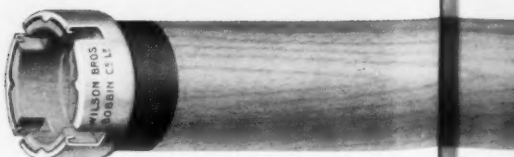

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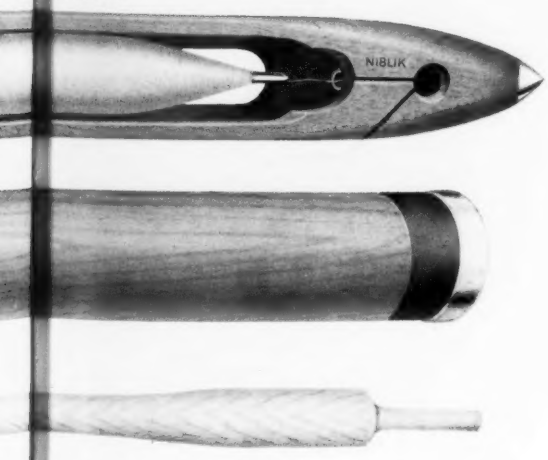

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NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

A. F. MACINTYRE has accepted the position of agent at the Maginnis Cotton Mills, New Orleans, La. Mr. Macintyre was formerly agent of the Fulton Bag & Cotton Mills, Atlanta, Ga., and more recently connected with the Cotton Mill Products Company, of Jackson, Miss.

MILTON ENSOR has resigned as superintendent of the Adrian and Madora Mills of the American Yarn and Processing Company, Mount Holly, N. C., to become treasurer and general manager of the Rhyne-Anderson Mills, Troy, N. C., effective September 1st. Mr. Ensor, one of the more popular executives of the Carolinas, has been with the Mount Holly organization for five years.

GRADY KENNINGTON has been made general manager of the Valley Mills, LaGrange, Ga., succeeding J. Alfred Lechler, resigned. William H. Jones is manager.

FRANK L. ASBURY, JR., formerly superintendent of the Valley Mills, LaGrange, Ga., has been appointed superintendent of the Hillside Cotton Mills, LaGrange, Ga., succeeding John O. Blackmon, who has taken a position with the yarn department of Callaway Mills, Inc., in the New York City office.

W. R. TATTERSALL has succeeded Harry H. Boyd as general superintendent of the Chadwick-Hoskins Company, Charlotte, N. C., Mr. Boyd having resigned on account of ill health, it being his intention to retire from active business. Mr. Tattersall has been assistant general manager of the Jennings Cotton Mills and the Mansfield Mills, at Lumberton, N. C.

J. T. TIDWELL, formerly superintendent of the Judson Mills, Greenville, S. C., and more recently superintendent of the new silk mill of that company, has become superintendent of the Victor plant of the Victor-Monaghan Company, at Greer, S. C.

HENRY F. LITTLEJOHN, formerly overseer of weaving at the Judson Mills, Greenville, S. C., has been made superintendent of the company's new silk mill, succeeding J. T. Tidwell, resigned.

WALTER W. ROGERS, formerly overseer of weaving at the Victor plant of the Victor-Monaghan Company, at Greer, S. C., has been made overseer of weaving at the Judson Mills, Greenville, S. C., succeeding Mr. Littlejohn, who was made superintendent of the silk mill.

CLIFTON CORLEY has resigned as president of the Vardry Mills, Greenville, S. C., being succeeded by John N. Tracey, of Philadelphia. J. D. Williams has been promoted from assistant secretary to secretary and treasurer, and will be active manager of the plant.

FRANK R. SCHUBERT has been appointed general manager of the Strom Ball Bearing Manufacturing Company, Chicago, and has been succeeded by John Dlesk as works manager. Lorenz Peterson continues as assistant works manager in charge of production.

ALLEN L. CAMPBELL has resigned his position as overseer of weaving at the Poinsett Mills, Greenville, S. C. The operatives of his department presented him with an appropriate gift on his leaving, expressing sorrow at his resignation.

J. H. COOKSON, who has been connected with the Art Cloth Mills, of Lowell, N. C., has been elected vice-president and director of the new Shelby Cloth Mills, Shelby, N. C.

E. E. GAMBRILL, well known cotton mill executive of Bessemer City, N. C., died recently at a Gastonia hospital followning a brief illness.

H. F. FENTON has been made superintendent of the southern plant of Wallace Wilson Hosiery Company, Salisbury, N. C., succeeding Edward Scheck. The plant is now in operation, and the plans of the company are for further expansion in the future.

H. E. BATES, formerly superintendent of the Deep River Mills, Randleman, N. C., has become superintendent of the Art Cloth Mills, Lowell, N. C.

O. A. SULLIVAN has been promoted from overseer of carding to assistant superintendent at the Gaffney Manufacturing Company, Gaffney, S. C. J. W. Godfrey has been promoted from second hand to overseer of carding.

T. R. MORTON, formerly overseer of spinning at the Loray plant of the Manville-Jenckes Company, Gastonia, N. C., has been made assistant superintendent at the Bordon Mills, Kingsport, Tenn.

G. J. JERNIGAN has been made superintendent of the Boylston-Crown Mills, Dalton, Ga. He was formerly overseer of carding at the Crown Cotton Mills, Dalton.

C. F. SPRINGER has been made assistant superintendent and overseer of carding and spinning at the Crown Cotton Mills, Dalton, Ga. He was formerly overseer of spinning.

J. O. WILEY is the superintendent of the new Waldensian Weavers, Inc., at Valdese, N. C.

J. B. PLATT has resigned as superintendent of the Acworth Cotton Mills, Acworth, Ga.

O. B. PARIS recently became superintendent of the Campbell Knitting Company, Williamsburg, Ky.

J. H. CARPENTER has returned to his former position as superintendent of the Perkins Hosiery Mill's cotton mill department, Columbus, Ga.

C. C. NIFONG has become secretary of the Maginnis Cotton Mills, New Orleans, La., succeeding J. F. Simpson, resigned.

O. L. YARBROUGH has become overseer of spinning at the Hickory Spinning Company, Hickory, N. C. He was formerly at the Baldwin plant of Aragon-Baldwin Mills, Chester, S. C.

O. A. HURSTON has been made overseer of weaving at the Union Division, Consolidated Textile Corporation, LaFayette, Ga., succeeding A. P. Smith, who recently resigned.

Are You, Too, Buying Spools You Don't Use?

IF spool breakage is causing you to buy replacement spools every three or four months, you too, are paying for spools you don't use.

U S Fibre Head Spools are designed to give a much greater length of service than the ordinary spool—the thin, tough fiber head allows a greater traverse for the same length overall—and freedom from rough edges for a greater length of time.

A trial will convince you of the superior merits of U S Fibre Head Spools—samples sent on request.

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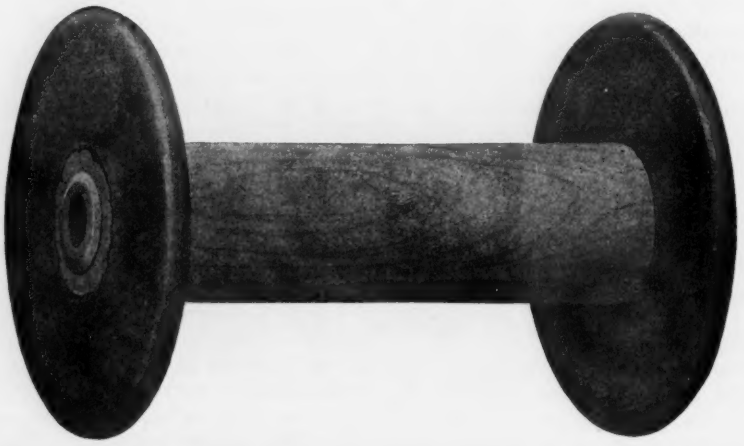

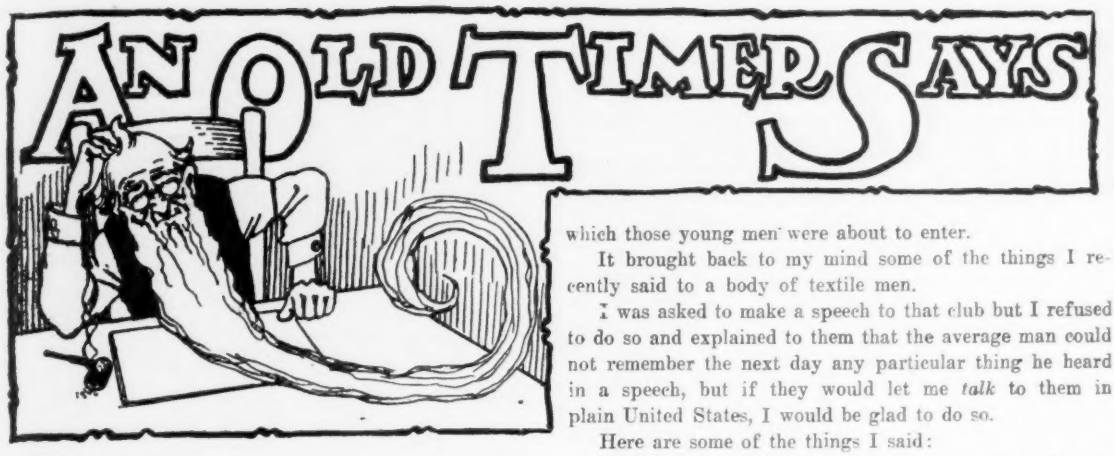

Whether it is ethical for me to say what I am going to say at the beginning of this article I don't know, nor do I know whether my Editors will publish it or not, however, I want to say it and I am going to do so.

I want to thank "Old Timer's" many readers for the very kind letters they have written the Editors about the real benefit they have derived from his teachings.

When readers write COTTON that "Old Timer" has been the cause of their getting promotion, I don't think I would be human if I did not feel good over it.

When other readers say that they are really taking to heart what "Old Timer" says and are determined to make bigger men of themselves—that is certainly encouraging.

For the benefit of those of you who do not take "Old Timer" seriously, (remember that article he wrote about the way most people read—in one ear and out the other?) I assure you that you would be surprised to know the number of men who are getting something out of the articles and I would be only too glad to give you many specific instances from the mass of letters that my Editors receive, but of course, I cannot do so because the Editors would be afraid it would give "Old Timer" the "Big Head" and if that should happen, then the articles would not be worth a darn.

For your information, let me state that "Old Timer" is not a professional writer as some of you may think. He only writes for the one desire of hoping to be of service to his brother overseers and superintendents and all the "dope" he hands out is based on practical experience or upon inspiration which comes from practical experiences.

I have been wanting for some time to let the readers from Canada to China, who have written the many nice letters to COTTON, know that "Old Timer" does appreciate their expressions and that those letters have been the inspiration back of many of the articles which you have read.

Now that I have that off my chest, so to speak, whether Mr. Editor likes it or not, let's get down to brass tacks.

• • • •

In looking over my daily paper today I noticed two statements which made me think and think hard:

One was by the President of the United States saying that there was a great scarcity of *"Big Men."*

Another was from the President of a world known University stating to his graduating class that there was a scarcity of *"Big Men"* in all the different vocations into which those young men were about to enter.

It brought back to my mind some of the things I recently said to a body of textile men.

I was asked to make a speech to that club but I refused to do so and explained to them that the average man could not remember the next day any particular thing he heard in a speech, but if they would let me *talk* to them in plain United States, I would be glad to do so.

Here are some of the things I said:

First, gentlemen, I must ask you to pardon the use of the personal pronoun "I" with the assurance that it is not used from a sense of egotism but for the purpose of giving you illustrations based on actual facts instead of fiction.

I have been over the very same road that you are traveling now—except that the road has been worked out since I went along. It used to be full of stumps, rocks and mud holes—just like a road opened up through a big body of woods before they had dynamite or stump pullers or surveyors. You would no more than get started going nicely down one hill until you came to another hill that seemed impossible to climb.

The road you are traveling today has been graded around the hills, the stumps removed and the road top soiled so that you have easy sailing compared with what I had.

When I was overseer I have had young men save up their money for two or three years until they had enough to pay their board for a year and then come to me and offer to work for a year without pay in order to learn to be a section man.

Look at the difference today—overseers and superintendents are begging for young men to learn to be section men.

In my time a grinder would not let you see him set up a card to save your life.

A loom fixer would no more show you how to build a set of drill cams than he would fly, and if the overseer was figuring on a piece of paper when you went up to the desk to see him he would tear it up for fear you would learn something.

Oh, boy! What if I had had a magazine like COTTON to study (not read) in my day!

I say to you the road has been worked out since I went along.

I felt very close to this body of men (just as I do to you my reader). I know that I have a real message for you if you will only remember some of the things I say and then try to profit by them. I told them, *I know that I can put dollars in every man's pocket who sits before me tonight.* If you will only realize that I am talking to you *personally.*

No man can learn very much or progress very fast without the cooperation of his fellowman. To make a radical illustration:

You know there are certain large bodies of land on the earth where nothing grows, where there is no water and the land is practically all sand.

These large arid bodies of land are called deserts and no people can live there. The desert of Sahara is the kind of body of land I am trying to visualize to you.

Now suppose that right in the middle of one of these deserts there is a small body of land where there is plenty of water and trees and fertile land, a beautiful spot, and that twenty years ago a cotton mill was built there.

Let us suppose that there was no way for these people in that mill to get out of that desert to see another mill and that they have stayed right there these twenty years and worked.

Now since we have air ships, suppose we fly over and see how those people are operating their mill today. What are some of the things you would see? Weavers sucking shuttles, weavers oiling looms, just before stopping time you would see each weaver get out his broom and start to sweep up, while all of their looms would stop; spooler hands tying chicken head knots. You would see the stripper on the old stationary flat top cards pick up a flat to strip it, juggle it around a few times, then throw it out in the alley.

You would see the grinder up on a card stripping the cylinders out by hand, and here comes the water boy with a bucket of water and two dirty old dippers that everybody has stuck his nose into.

The point I am making is that mill would be operating *today* practically like it was *twenty years ago.*

Do you catch the point? I don't see how I could possibly make it any plainer than that it takes cooperation of people working together to make progress, and it means success for the individual man who is broadminded enough to cooperate.

This club gives you an opportunity of association with your brother worker that you cannot get in any other way. It opens up an opportunity for you to wake up to the fact that you can prepare yourself for a bigger job than you now have if you have got the backbone to work for it.

There are ten good jobs where there is one good man to fill them. And here is a much more radical statement than that: There is not a man in this house tonight but what can prepare himself and successfully run a bigger job than the one he now has. That is a pretty big statement, I know, but I can prove to you that it is a fact even to the man who can hardly read and write and I know that all of you have got some education.

What does it take for a man to get a better job? Not a thing in the world but the ability to run it—providing, of course, he is of good character and is honest.

What is ability? The dictionary says it is "The state of being able." Being able to do things.

How are you going to make yourself able to do the things required to run the bigger job than you now have?

The two first things are education and practical experience. You are getting the practical experience because it is being forced upon you. You are having to work to make a living and in doing that work you are getting the practical experience.

But how about education? Are you actually making any effort to get it?

Oh! Yes I heard you, I heard several of you think out

This Condition Costs Money

Wherever a bleachery or dyehouse operates under conditions like these the owners are paying out money for spoilage, repairs and low production far in excess of their own knowledge.

When we visit one of these plants and tell the operating executives that we can absolutely clear the atmosphere, they are inclined to be skeptical. When we tell them of the saving effected in less spoiled goods, longer life of roofs, and increased production; and back up our statements with figures given by executives of plants where our equipment is in use; we convince them.

The Vice-President of a company where we sold two Buffalo Air Conditioning Systems in 1919 says: "Buffalo Forge Air Conditioning System in our dyehouses save $10,320.00 a year by increasing production 15%, eliminating spotted goods, and greatly lengthening the life of the roof. These Buffalo Forge Systems have completely eliminated the trouble formerly experienced. The atmosphere is now perfectly clear, and the men can work at maximum speed. Spotting of the goods is practically unknown, and the life of the roofs has been greatly increased."

If you are interested in saving money you'll find out more about Buffalo Equipment. Sixteen branch offices in the United States are ready to serve you.

Buffalo Forge Company

460 BROADWAY BUFFALO, N. Y.

loud when the thought popped into your mind, "I am too old"; it is too late for me to start."

When you say "education" the average man thinks of college or school but some of the best educated men, history tells us about, never went to college.

We have had presidents of the United States who never went to college. We have had millionaires who never went to school, and some of the biggest mill men in our time have never had even a high school education. But they had the perseverance, the backbone to study at home while the other fellow loafed on the streets or went fishing or played pool.

They *made* themselves educated men—not in the sense of a college education but the ones who were mill men studied text books and textile magazines. They *educated themselves* for their particular line of work.

One hour of study at night will fit any man for a bigger job.

I could give you many actual illustrations to prove my point. You are *not* too old. It is *not* too late.

Most of you who use tools know that tools with the name Starrett on them are good tools.

Well, L. S. Starrett was a broke man at 50 years old. Besides he was handicapped by being deaf; but he made a new start and today he is a millionaire past 70 years old and still going strong.

The man who fools himself by saying he is too old is just naturally lazy, that is all there is the matter with him.

The attitude some of you take towards your work reminds me of the joke I heard about the mule one old darky sold another.

Sam was a pretty slick horse trader. Reuben was a good old darky who owned a little farm.

Sam sold Reuben a mule.

A few days later Sam and Reuben met in town and the following conversation ensued.

"Sam dat mule you sold me must be blind."

"Why fore you think dat mule am blind, Reuben?"

"'Cause when I took him home and turned him in de pasture dat mule run right slam into a tree."

(Sam had to think pretty quick to know just what to say.)

"Shucks, Reuben, dat mule ain't blind; he jus' naturally don't give a dam."

I say some of you act like Reuben's mule toward your jobs.

If it were possible to get you to run your job the same as you would run it if it belonged to you there would not be so many good jobs running around loose with nobody to fill them.

As before stated, I want to give you advice tonight that you will remember and to bring out my point about running your job like it belonged to you, I am going to ask you a question that I want each one of you to answer to yourself.

If you will remember it and answer it honestly to yourself every day of your life I will guarantee that it will put dollars into your pockets.

The sentence has only seven words—how am I going to get you to remember it?

I'll just write it down on this blackboard so you can all see it.

"WOULD I HIRE MYSELF FOR MY JOB?"

Copy that sentence on a piece of paper and paste it in your old hat so you will see it a hundred times a day, so it will finally get fixed in your mind so indelibly that you will think of it every time you get mad, every time the work runs badly, every time you catch yourself loafing on the job, every time you use supplies that you know you would do without if you had to buy them with your own money.

If you will take that one sentence as your "Motto" it will make a better man of you and you will soon be digging after the one other thing that you need to hold that better job; and that is education.

I have probably said some things to you that it is hard for you to realize are possible for you to accomplish. But I have been over the road and I am like the darky who the boss asked how old he was.

"Well, boss," he replied, "counting in years, I guess I'se about 20; but counting by the fun I'se had I'm most a 100."

Counting from the experience I have had, I guess I am about 200, therefore, what I have told you is based on actual experiences and I know that you can do the things I have told you if you have got the grit to go down after it.

There never was a time in the history of the world when it was so true that "Knowledge is Power."

We are in an age of big business, big railroads, big cotton mills and the demand is going to be for *big men* to operate them. *You* can be one of the big men if you want to hard enough.

• • • •

The above remarks, dear readers, are still my "Sentiments" and although I am sitting here at my desk tonight in my "B V D's" (it is hot as blazes) and can't *YELL* it at you the way I did to those fellows, I hope you will read the article again, in a few days after you have read it the first time, and really try to carry it to your work and keep with you every day and ever hour the thought that "Old Timer" has tried hard to pass on to you.

And if you will; my promise to you will come true—

It will put dollars in your pockets.

The General Dyestuff Corporation has acquired the dyestuff business heretofore carried on by H. A. Metz & Co., Inc., the Consolidated Color & Chemical Company and the Central Dyestuff & Chemical Company, together with their stock of dyestuffs, and will in the future act as the sole importer of the dyestuffs manufactured by the Farbwerke, vormals Meister Lucius and Bruening of Hoechst a/M, Germany, it is announced. B. A. Ludwig, formerly vice-president of the National Aniline & Chemical Company, who was recently appointed the sole importer of the products manufactured by Messrs. Leopold Cassella & Co., of Frankfurt, has joined this company as a vice-president and director, bringing to it the agency for Cassella products. The main office of the company will be continued at 122 Hudson St., New York City, with the branches of the former organizations at Boston, Providence, Philadelphia, Chicago, Charlotte and San Francisco.

The Dinsmore Manufacturing Company, Salem, Mass., makers of factory sewing machines and supplies, announce that W. A. Kennedy, 1106 Johnston Building, Charlotte, N. C., has been made their southern representative.

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Conscious Business is business that *knows* itself—whence it came and where it is going—how far and how fast—and its guiding *voice* is THE BUDGET. Where this voice is present there is Profit and Progress. Without it—waste, loss, failure.

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Investigating Yarn Breaks.

EDITOR COTTON:

We are in need of help and would like to know if you can tell us the number of ends that will break down per spindle per hour in an average mill on various numbers, say 16s, 22s, 30s, 40s, 60s, 75s, 80s, and 100s.

If any of your correspondents or readers have made any investigations on any one or more of these numbers along the line indicated we shall be glad to know what the results were, together with such organization and operating details as might be necessary to make such figures intelligible. CONTRIBUTOR No. 637.

Curing Fly Frame Troubles.

EDITOR COTTON:

"G. D. S. (S. C.)" seems to be in trouble. I hope the defenders of the bobbin lead system will hasten to aid him. It is strange indeed, that with such a perfect system, every little while we find one of our readers in trouble with it. But you will find that the defenders of the bobbin lead will not answer. Why? Because it takes one who understands a fly frame to answer the questions. Here is a pure case of unequal conditions that I have been preaching in this department since the year 1913.

"G. D. S." will find the trouble in the compound pinion, and should go at it in this way: A smaller compound pinion than the ones for which the cones were modified will make the tension slack at the beginning of the set, and a tight tension when the set is about three-fourths full. A larger gear will cause a tight tension at the start and run slack at about three-fourths of the set. Following, is the reason:

With a small compound pinion the bottom cone speed must be increased in proportion, and the movement of the rack less, to hold the loss on each traverse. Consequently, the working surface area of the cones is not used up. By holding the belt on the small end of the bottom cone with an increased speed, there is more slippage of the cone belt, hence the slackness.

When the ratio is near equal at about three-fourths of the set, there is less slipping of the cone belt, and this causes the light tension. On the other hand, with a larger compound pinion, the speed of the bottom cone must be reduced, and then there is less slippage at the start. The movement of the rack must be increased, which may force the use of the total working area of the cones, and which may not suit the intermediate speeds at this point.

As "G. D. S." states: "The frames in our card room are of a very old model of Woonsocket and Pettee make."

I think he will find that the pitch in the train of gears driving the bobbins was changed at some time or another and the compound pinion changed to make up the difference between a small and a large tooth, or vice versa.

Concerning the weighting of the rolls. If "G. D. S." will let us know what type of rolls he is using, whether solid or shell, also the type of saddle, we may be able to help him. WASH (R. I.)

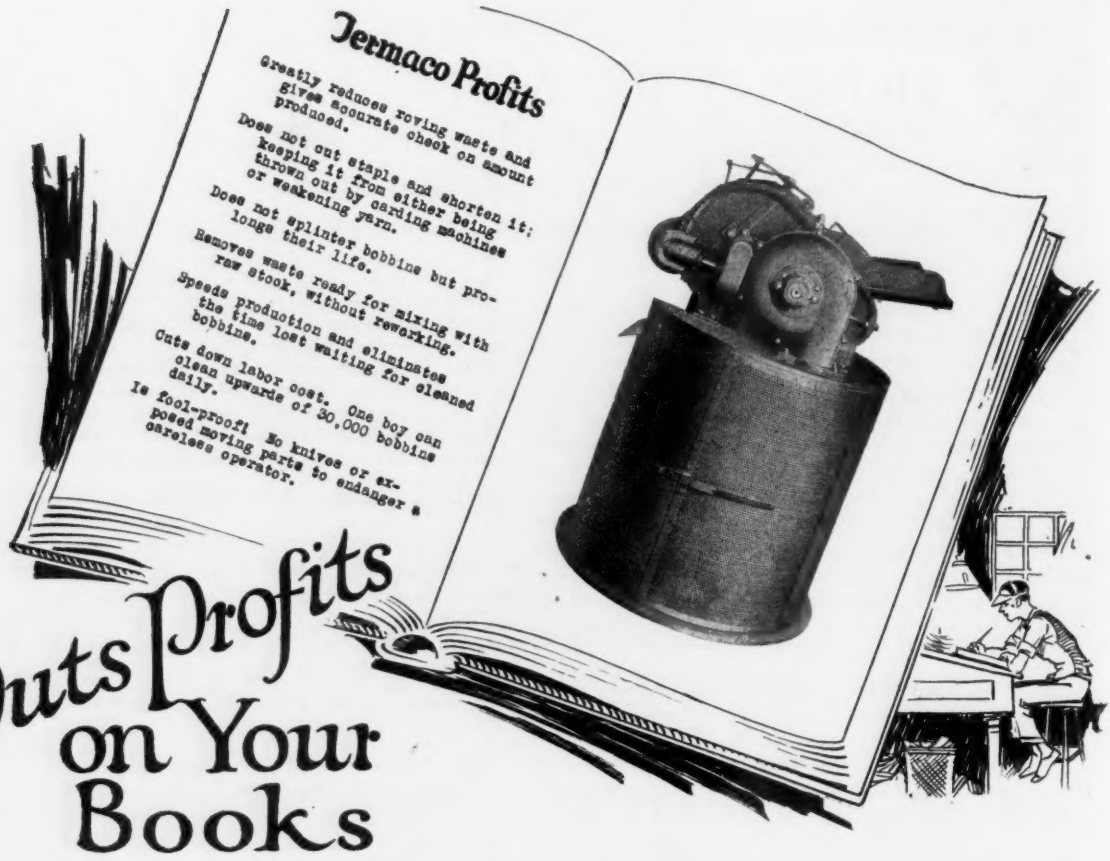
EDITOR COTTON:

I notice in the June issue of COTTON that "G. D. S. (S. C.)" is having some difficulty with his fly frame tensions, and in reply thereto will say that I think the best thing he can do is to look over his frames and figure through each train of gears, or at least through the three trains, namely, lay, twist and tension, getting a constant for each, if he has not already done this. This will enable him to get his frame tensions correct. It seems foolish, however, to tell a practical mill man to do this.

Most mill men figure a change from the hank being made and that desired and the gears on the frame, and by this method mistakes will run on for years and will never be overcome. However, by using constants for lay, twist and tensions, this difficulty with tensions will not exist.

On two occasions in my experience this same difficulty has faced me. First, in a certain mill, the superintendent decided to double creel his spinning. This changed the entire card room, and when the change was over the card room could not keep up with the spinning, so in order to supply the spinning, the card room overseer heavied up on his laps and finished sliver, not making any change on his fly frames, and the results were that when this sliver came to the slubber the tensions went all to pieces. The more the tension gear was changed the worse it became until finally we changed the lay; or in other words, opened the lay, and this overcame the difficulty with the tension.

Secondly: I was once placed in a speeder room as section hand. We were making 2.00 and 2.30 hank roving respectively, using 60 per cent relative humidity. This mill was between two streams, yet we needed humidity. When I went on the job I found that the frames making 2.00 hank roving would not run well with the humidity and the frames running 2.30 would not run well without the aid of humidity. I called the overseer's attention to


Termaco Profits
Greatly reduces roving waste and gives accurate check on amount produced.
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this matter, with the result that I was ordered to correct this difference in the tensions.

I then changed the tension gear one tooth tighter, but this did little good. They were just about as much too tight, as they were too slack, before the change. Then I opened the lay one tooth, and as long as I could keep 60 per cent relative humidity, my tensions were satisfactory.

T. A. A. (S. C.)

Setting the Comber Cushion Plate.

EDITOR COTTON:

In setting a Whitin comber I find that the cushion plates are not accurate at both ends. The cushion plate is set to 1 7/16 inch from the detaching roll with an angle of 37 degrees on the nipper knives.

In setting the cushion plate, if I were to start setting No. 4 delivery on the left of the plate 1 7/16 inch from the detaching roll, and then set the left end of No. 3 delivery the same, coming back to the right end of No. 4 delivery, my setting would vary about 1/16 of an inch both ways at the different deliveries.

I do not say that this happens at every delivery, but it happens often enough, and I would like to get opinions from some of the readers of the "How Other Men Manage" department concerning my difficulty. JOE (MASS.)

Traveler Trouble and Yarn Breakage.

EDITOR COTTON:

In a recent issue of COTTON "M. F. (Tenn.)" advises that he is making 30s warp out of 7/8-inch staple cotton, using a 1¾-inch ring, No. 2 flange, with 7-inch traverse, 13/16-inch whirl, 1-inch front roll, 7/8-inch back and middle rolls, 5.56 hank roving with 10/0 travelers, the front roll speed being 88 r.p.m., with standard warp twist. He states that his yarn breaks at the ring, and that if he increases the speed the thread snaps down at the traveler.

In my opinion, "M. F." has an equipment for spinning 22s yarn, and nothing finer. In the first place, to make 30s warp, he should use from 1-inch to 1 1/16-inch cotton. In the second place, his ring is too large for 30s, and should be 1 11/16 No. 1 flange, or a 1⅝-inch No. 2 flange. I prefer the No. 1 flange. He should have a 6-inch traverse with a 7/8-inch barrel bobbin. The size of his rolls and his drafts are all right.

If "M. F." will make these changes, and, in addition, change to filling wind, and if his carding is in proper condition, he could run his front roll at 130 r.p.m., and it would soon pay in difference of speed from 88 to 130 r.p.m.

The mill in which "M. F." is located is one of many that try to spin fine yarns on coarse yarn equipment. The size of the ring and the bobbin are two of the most neglected things in a cotton mill.

I would advise "M. F.," if he makes these changes, to raise the guide wire as high as he can get it, then raise his spinning rail so that the top of the bobbin will not be over two inches from the guide wire. I positively know if he will carry out these suggestions he can accomplish the results he desires. C. M. (GA.)

EDITOR COTTON:

In answer to "M. F. (Tenn.)," whose question with reference to his 30s yarn breaking at the traveler, I might offer a few suggestions.

If I were spinning 30s warp I would want better staple than 7/8-inch to get standard speed and smooth running work. His front roll speed of 88 is about 32 r.p.m. too low.

The trouble could be in the circle of the traveler. I had some 17s warp running on a No. 1 flange and the ends would break badly at the traveler every time the ring rail would near the top. I was using a ¾ circle traveler and ordered a larger size circle, getting an A 7/8 special circle, and this remedied the trouble. But since "M. F." does not give the circle he is using, it would be hard to advise whether to increase or decrease the circle. His 10/0 travelers ought to be light enough for 30s warp.

His trouble may be in the card room. If the draft is to be shortened, it should be shortened in the carding in this case, as he could easily increase his spinning draft to 11.50 without any detrimental results. He will have to increase his carding production very much if he gets his spinning up near standard speed—or maybe he is stacking roving in the card room now.

The drawing rolls, if steel, may be cutting his sliver, and this, with his probably stretched roving, will make thin places—and these certainly give spinners much trouble.

Does he use separators? If not the ends may balloon together. What is the distance between the thread guide and the top of the bobbin? One and three-quarters inches would be about right in his case.

It would be hard to tell what his trouble is unless more information was given or unless one might see his work running. L. K. R. (TENN.)

EDITOR COTTON:

Looking over the lay-out of "M. F. (Tenn.)," who states he is having trouble with yarn breaking at the ring, I should say that it is not so very bad for his 30s, and he should get at least 116 r.p.m. on his front roll instead of 88 r.p.m., although the 7/8-inch staple is too short to put into 30s. But having to do the best we can with what we have, I would suggest that he try raising and lowering his guide boards, at the same time trying different weights of travelers. His present weights look good to me if other conditions are right.

Then again, he may have a bad set of rings; if so they will show a blue cast, having lost temper and being worn to a rough surface. The spindles may not be properly plumbed, or in center; the ring rails may be out of level, lengthwise or sidewise. In either case the remedy is to get them right. Anything that puts an avoidable strain on the yarn is a bad condition, and "M. F." will find that the best remedy for any difficulty is just common sense and that about one hundred per cent of our troubles are very simple ones.

The first thing for "M. F." to do is to see that his spinning is correct. If the trouble persists, he then should look for cut or stretched roving, one speeder in a large room stretching roving will make a spinner think his job is one hell of a place. He should see that the roving has enough twist to pull the bobbin without stretching, and that the carder does not run too much tension on his frames. He can easily determine this by taking a bobbin in his hand and testing its "density"; it should always give to the

touch instead of having a hard or firm feel. "M. F.'s" trouble could easily come from as far back as the drawing, and in such a case it is hard to find. The idea I wish to convey is that weak places in yarn will naturally break at the traveler and it isn't necessarily the fault of the traveler, yet it may be there. Lastly, I would say that the carder and spinner must work together and in harmony—passing the buck to the other fellow will never get anybody anywhere as a permanent relief in any difficulty.

J. C. E. (Ga.)

The Best Use of Dyes.

Editor Cotton:

The question is frequently asked as to the best way of using dyes, that is, their properties, behavior and so forth and how they should be used to the best advantage, and in order that I may possibly assist some one of the readers of the "How Other Men Manage" section of Cotton I will submit the following:

Speaking in general, in observing the properties of dyes, the dyer will find that the following are usually considered the essentials for good results. First: the solubility of the dyes in water; second, their behavior in the dye bath during the dyeing process, their leveling power, exhausting properties and their influence to metal dye vessels; third, their behavior on the fiber toward the various physical and chemical influences, which come into action during the manufacture and weaving of the dyed goods.

The solubility of a dye depends not only on the dye, but on the condition of the water employed. For instance, the water might be impregnated with lime, or iron or possibly acid, which are all very objectionable items. If the water contains any of these it must be corrected accordingly. On no account must the dyestuff be added direct to the bath, as some dyers do, but it is better to dissolve it first and then add it to the bath through a sieve or strainer. Take, we will say, one part of dye to 250 parts of water for dyes where there is difficulty in dissolving, and one part of dye to 10 or 15 parts of water for dyes that are easily soluble. Boiling water should always be used when making up a dye bath, unless instructions are given otherwise. If the water is pure (i.e., free from lime or iron) such as condensed steam, there is no fear of trouble, as the dye dissolves readily and dries evenly, or level, providing the goods are in good condition for the process. On the other hand, if there is lime present in the water it should be treated according to the character of the dye to be employed. For basic dyes, acetic acid is used by adding three-fourths of an ounce at nine degrees twaddle to each 100 gallons of water. The reader will find this a good proportion as it neutralizes all traces of lime.

Dyes such as methyl violet, malachite and ethyl green stir with a little cold water and a little acetic acid, and then dissolve in boiling water. In dissolving water blue, alkali blue and acid violet add a small quantity of soda or of borax, if the water is hard. On no account use acid on these dyes as they are acid of themselves and are chemically opposed to all acids. For resorcin dyes, such as eosin, erthrosine and rose bengal, boil the water with a little soda and allow it to settle and use the clear liquid to dissolve these dyes. For substantive bottom dyes hard water is softened by the method previously described, and for delicate shades, the impure water should be boiled up with soap and the scum that comes to the top ought to be removed. This is a combination of iron, magnesia, etc., and fatty acid from the soaps. For sulphur dyes it is best to dissolve them with sulphide of soda.

The leveling power and exhaustive properties of the dyes stand relative to their chemical nature and to the affinity for the fiber resulting therefrom. Dyes which exhaust with difficulty, as a rule, dye more evenly than those which exhaust completely, but are less fast to washing and light. When using mixtures of dyestuffs, only dyes should be used which exhaust in approximately the same degree. Wooden vats are best to use, and metal ones discarded. Some dyes are influenced unfavorably by steam pipes, valves and metal parts in a dye vat (or copper) and a dyer is thrown off his shade, and in some cases the color is entirely changed. Bottom dyeings when dried come out lighter in shade, whereas wool becomes darker. With sulphur dyes there is also a change of the shades by the oxidation of the dyestuff. Sulphur black dyeings come out of the bath black green, but on drying oxidize to blue black. Sulphur blue turns out brighter if the goods are dried slowly. In comparing dyeings as to their fastness to light, two must be chosen that are exactly the same in shade, or in other words equal in strength, and they must also be dyed on the identical piece of material. Even when this precaution has been used, the test sometimes varies.

W. B. (Me.)

Running Over and Under on the Fly Frame.

Editor Cotton:

Nothing will give the mule or the ring spinner more trouble than running over or under on fly frames, which trouble is found mostly on English fly frames built by English builders. The remedy is simple and is known by all the old timers. However, there are, no doubt, many younger men who will appreciate the following practical explanations as to how to re-arrange an old latch builder so as to make a perfect bobbin.

The first thing to do after the frame has doffed is to run the carriage so that the eye of the presser finger will be exactly between or in the center of the two shoulders of the bobbin. The rack being wound, notice how far the poker bar is in the slide. It should be ⅛ of an inch from the end of the slide when the poker bar is dead level with the slide. Both should be leveled and set in this manner.

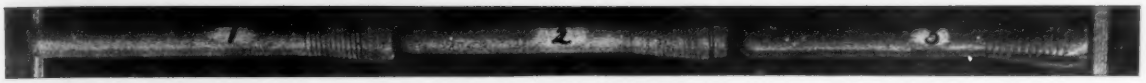
With the foregoing setting you can get the same amount of movement at each change of the carriage which will give an even taper at both ends of the bobbin. If this fails to check running over and under, the fault is in the rocker and latches.

If the rocker and latches are worn, get new ones and square them to each other. If there are no latches or rockers on hand, take the rocker out and take it to the machine shop and have a competent man inset a piece of steel on one side of the jaw of the rocker. The steel should be thick enough to insure a comfortable clearance between the twin gears and pinion.

After this is completed level the poker bar and slide. Next raise the latch screws, run the carriage and set the latch screws to the desired length of the traverse.

At the completion of the set the reward will be a perfectly built bobbin.

Wash (R. I.)



No. 1

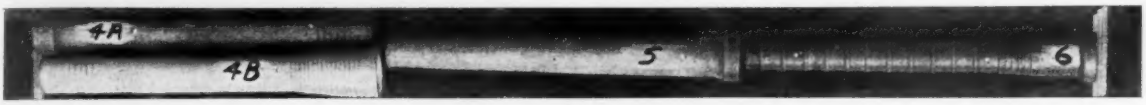
10s carded yarn;7,500 r.p.m. speed of spindle;3.25 twist multiple used; 1¾-inch stroke; No. 2 flange, 1⅞-inch ring; band drive; Strict Middling, ⅞-inch cotton; 2.00 hank roving for spinning; 190 r.p.m. speed of front roll; 7-inch traverse; 4-inch gauge frame without separators.

No. 2

60s carded yarn; 10,200 r.p.m. speed of spindle; 4.75 twist multiple used; 1½-inch stroke; No. 1 flange, 1½-inch ring; band drive; Strict Middling, 1¼-inch cotton; 10.70 hank roving for spinning; 96 r.p.m. speed of front roll; 6-inch traverse; 2¾-inch gauge frame without separators.

No. 3

30s carded yarn; 12,008 r.p.m. speed of spindle; 4.75 twist multiple; 1-inch stroke; No. 1 flange, 1¾-inch ring; tape drive; Good Middling 1-inch cotton; 6.00 hank roving for spinning; 118 r.p.m. front roll; 6½-inch traverse; 3½-inch gauge frame without separators.



No. 4

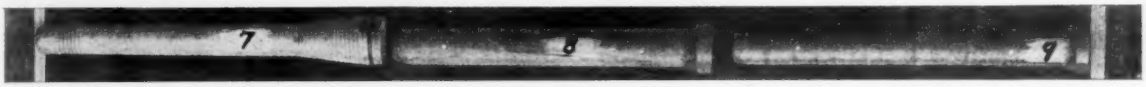
A—Bobbin Now Used.
B—Bobbin Being Adopted.
20s combed yarn; 7,023 r.p.m. speed of spindle; 3.30 twist multiple used; 1¾-inch stroke; No. 2 flange, 2-inch ring; band drive; Good Middling, full 1-inch cotton; 4.00 hank roving for spinning; 152 r.p.m. speed of front roll; 6½-inch traverse; 3½-gauge frame without separators.

No. 5

30s carded yarn; 9,000 r.p.m. speed of spindle; 4.81 twist multiple used; 1½-inch stroke; No. 2 flange, 1¾-inch ring; tape drive; Strict Low Mid. cotton; 5.88 hank roving for spinning; 110 r.p.m. for front roll; 7-inch traverse; 3-inch gauge frame with separators.

No. 6

30s carded yarn; 9,300 r.p.m. speed of spindle; 4.87 twist multiple used; 1¾-inch stroke; No. 2 flange, 1⅝-inch ring; band drive; Middling 1-inch cotton; 5.85 hank roving for spinning; 114 r.p.m. of front roll; 7-inch traverse; 2¾-inch gauge frame with separators.



No. 7

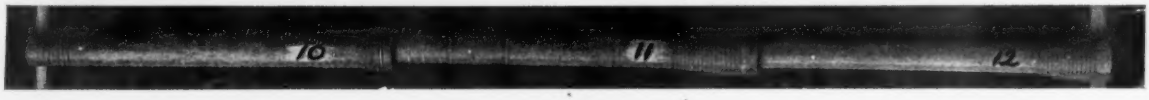
30s carded yarn;10,150 r.p.m. speed of spindle;4.75 twist multiple used; 1½-inch stroke; No. 2 flange, 1⅝-inch ring; band drive; 1-inch cotton; 5.40 hank roving for spinning; 120 r.p.m. speed of front roll; 7-inch traverse; 2¾- and 3-inch gauge frame with separators.

No. 8

50s combed yarn; 9,600 r.p.m. speed of spindle; 4.00 twist multiple used; 1½-inch stroke; No. 1 flange, 1⅝-inch ring; tape drive; 1¼-inch Peeler cotton; 10.00 hank roving for spinning;112 r.p.m. front roll; 6-inch traverse; 3¼-inch gauge frame without separators.

No. 9

30s carded yarn; 9,400 r.p.m. speed of spindle; 4.50 twist multiple used; 1½-inch stroke; No. 1 flange, 1 11/16-inch ring; band drive; Middling 1-inch cotton; 6.25 hank roving for spinning; 112 r.p.m. front roll; 7-inch traverse; 2¾-inch gauge frame with separators.



No. 10

23s combed yarn; 8870 r.p.m. speed of spindle; 4.25 twist multiple used; 1½-inch stroke; No. 1 flange, 1⅝-inch ring; band drive; 1 13/16-inch Peeler cotton; 4.50 hank roving for spinning; 148 r.p.m. front roll; 7-inch traverse; 2¾-inch gauge frame with separators.

No. 11

30s carded yarn; 8,900 r.p.m. speed of spindle; 4.75 twist multiple used; 1¾-inch stroke; No. 1 flange, 1¾-inch ring; band drive; Middling 1-inch cotton; 5.85 hank roving for spinning; 120 r.p.m. front roll; 7-inch traverse; 2¾-inch gauge frame with separators.

No. 12

27s carded yarn; 9,500 r.p.m. speed of spindle; 4.80 twist muitlple used; 1½-inch stroke; 1⅞-inch ring; band drive; ⅞-inch Carolina cotton; 5.10 hank roving for spinning; 122 r.p.m. front roll; 6¾-inch traverse; 3-inch gauge frame with separators.

No. 13

40s carded yarn; 9,200 r.p.m. speed of spindle; 3.90 twist multiple used; 1½-inch stroke; No. 1, 1 11/16-inch ring; band drive; Strict Low Middling, 1 3/16-inch; 6.90 hank roving for spinning; 134 r.p.m. front roll; 6½-inch traverse; 2¾-inch gauge frame with separators.

No. 14

60s combed yarn; 9,500 r.p.m. speed of spindle; 3.50 and 4.00 twist multiple; 1½-inch stroke; No. 1 1½-inch ring; tape drive; Strict Middling 1¼-inch cotton; 12.00 hank roving for spinning; 110 r.p.m. front roll; 6½-inch traverse; 3-inch gauge frame without separators.

No. 15

26s carded yarn; 9,400 r.p.m. speed of spindle; 4.75 twist multiple used; 1¾-inch stroke; No. 2 flange, 1¾-inch ring; band drive; Middling cotton; 4.60 hank roving for spinning; 124 r.p.m. front roll; 6¾-inch traverse; 3¾-inch gauge frame without separators.

Bobbins for Filling-Wind Warp Yarn.

TO THE READERS OF "HOW OTHER MEN MANAGE":

At the Charlotte meeting of the Spinning Division of the Southern Textile Association, on March 13th, as stated by Chairman Harris in his Asheville report, there was an indication of a wide variation of shapes of bobbins for use in making warp bobbins with filling wind or build.

In an endeavor to determine as nearly as possible the best type of bobbin for this purpose, Mr. Harris sent to the members a questionnaire, asking for a sample of the bobbin used for this purpose, along with certain information.

No. 16

30s carded yarn; 9,300 r.p.m. speed of spindle; 4.75 twist multiple; 1½-inch stroke; No. 2 flange, 1¾-inch ring; band drive; Strict Middling 1-inch cotton; 5.95 hank roving for spinning; 116 r.p.m. front roll; 7-inch traverse; 2¾-inch gauge frame with separators.

The replies received naturally indicated a wide variation of practice, as to the shape and size of bobbin used. However, Mr. Harris prepared a number of these bobbins, with the information accompanying, on a board for display at the Asheville meeting, and this created considerable inter-

est. We present the accompanying photographs of this board, which shows the bobbins numbered, with the information relating to them indicated, in the thought that this display will be of interest to mills using or contemplating the use of this method on warp yarn.

THE EDITORS.

"Thread Laps" in Spinning.

EDITOR COTTON:

I shall appreciate having some of the readers of COTTON give their experience, and the remedies adopted in overcoming so-called "thread laps." By this, I mean when the bottom steel roll in spinning has a tendency to pull the strand back, causing it to lap up around the top front leather roll; or else, wrap around the steel roll, grooving the top roll.

In the June issue of COTTON I note that "F. R. T. (Ga.)" refers to his experience with a similar trouble and describes how he overcame it by the use of a flat top traveler on 40s to 44s yarn. I have tried smoothing up the front steel roll, even to the extent of filing into the flutes, the roll being well hardened, and have also tried various numbers of travelers, but with no apparent success. The trouble comes mostly on very fine yarns.

I trust that I may have suggestions from some of COTTON'S readers at an early date.

BERT (R. I.)

Unweighted Middle Top Rolls in Spinning.

EDITOR COTTON:

Following my letter in the May issue of COTTON about unweighted middle top rolls on spinning frames, "Contributor No. 14" asked, in the July issue, as to how we clean the rolls. He stated he had tried this system, but could not clean the rolls without stopping the frames. He also wanted me to state more specifically the advantages gained by the use of this type of roll.

All of our roll picking is done by special girls. We find that one girl can pick from 25 to 30 frames once each day. We pick the unweighted middle roll just the same as if it were a weighted roll. However, there is very little fly to accumulate on this roll if it is kept free of oil, and in picking it we train the girls to use care and not disturb the roll, simply making one stroke with both hands at the same time in a downward direction, that is, toward the front. If this disturbs the roll sufficiently to make a bad place in the yarn, we have not as yet been able to detect it.

We do not allow our spinners to do any roll picking. The top clearer boards are arranged with a thin strip of wood placed between the clearer cloth and the under side of the board, so that the clearer cloth is forced down just enough to bear slightly on the middle roll—this strip of wood being necessary as this roll is smaller in diameter than the other two rolls.

As to the principal advantages derived from using this system of roll weighting, we have found that we never have cockled yarn. We do not have to vary or move the roll setting to take care of different lots of cotton where the staple varies. A smoother and more uniform yarn is produced, and, where the drafts are taken care of, stronger yarn is produced, provided all conditions are met as outlined in my letter on the subject which was published in the May issue of COTTON.

CONTRIBUTOR NO. 642.

Why Card Comb Boxes Give Trouble.

EDITOR COTTON:

The article in April COTTON, entitled "Why Comb Boxes Give Trouble," discusses an important subject, because no superintendent or carder knows as much as he would like to about this.

In the first paragraph of this letter, "D. D. W. (Ga.)" says it is a common thing to go into a mill and find comb boxes so hot you can hardly put your hand on them, with pools of oil on the floor. Pools of oil on the floor are a good sign of a "hot-box," I'll say! And 95 per cent of the leaking comb boxes today could be stopped by taking them apart and cleaning out all the oil holes.

Take the H. & B. comb box for example. Let's take one apart and clean out the oil holes. All right. First, we will take the band pulley off. It could be knocked off with a hammer, but the safest way is to use something like a gear-puller and pull it off; then there is no danger of breaking the eccentric shaft, that is, the shaft on which the pulley is fastened. After the pulley is off, let's take a Stillson wrench and unscrew the eccentric bearing, taking care to catch the bearing up close to the box to prevent the wrench from bursting the oil cup.

Now we have it off. Don't you see those little rings on the eccentric shaft? Well, when the box is running and the oil comes out on the eccentric shaft and gets to those rings, they sling it off down into that little cup that houses them when the bearing is screwed into place. Now, just a minute. Down in the bottom of this little oil cup is a hole through which the oil runs back into the box. You say there's no hole there? Oh, yes there is. I knew, within reason, that it would be stopped up, because see how this band pulley and band have slung oil all over the floor. Get us a wire nail and we'll unstop it. This hole is bored parallel with the eccentric shaft. No, I know you don't see where it comes out to make it parallel, but see this end of the hole was plugged up by the card makers. Now, this hole underneath was bored to let the oil back into the box. It is bored at right angles to the one which is parallel to the eccentric shaft. They did this because they thought the oil would run back into the box better, but it was a costly mistake that the shop made.

Now I want to tell how to make this part of the box all right, that is, stop it from throwing oil all over the floor and the drawing cans. And stopping this oil from coming out by the way of the pulley, it will keep the band free from oil and the band will last considerably longer. I don't know what each reader pays per pound for the band-rope, but I do know that a band free from oil will last three times as long as an oily one.

But before I tell how to fix this thing, you must promise me you won't tell it. A friend of mine whispered it to me, and told me not to tell it. I assured him if I did, I would make the person promise he wouldn't tell it.

Where is that nail we had a minute ago? Now let's get a hammer, and put that nail in the oil hole inside the oil cup, and drive it on down, and it will punch out

that plug that is in the other end of the oil hole. Now then it is out! Now you see the oil has a straight shot back to the box. Well, to be sure that the hole underneath won't interfere with the oil on its journey back to the box, we'll drive a wooden peg in it to stop it up.

Now we'll take the top of the comb box off, remove the fork and clean out those two oil holes that run downward from the collar seats. And clean the top cap thoroughly, and make sure to clean out the air-hole in the top of the cap. If we don't, the oil will sometimes run out the gauge hole until the oil in the box is very nearly all out.

If the Saco-Lowell and Saco-Pettee cards are cleaned out they will work just as good. The oil holes are just about like the ones in the H. & B. boxes, except the hole that runs from the cup back into the box. The holes are bored just alike, that is, parallel to the bearing, but where the H. & B. has the hole stopped up inside the box, the Saco-Lowell is left open.

In the third paragraph of "D. D. W.'s" letter, he said he had experienced great difficulty, at the time of putting on a lap, by having the cotton run on over the doffer, clogging up and smashing down the clothing. His is not the only ones; there are other cards running just like this. I once had this same trouble on Lowell cards. From my practical knowledge of cards, I knew that the doffer comb was set too high, but to lower it would cause the end to run slack. I took a card and set the doffer comb down to where, when it was as close to the doffer as it was coming on its upward stroke, that it would continue to rise 1/16 inch. That is, when the comb was the closest to the doffer, it would rise 1/16 inch higher.

The next thing I did was to change the 30-tooth tension gear on the end of the bottom calender roll shaft to a 28-tooth gear. This was just what I wanted, and I changed them all this way, setting the combs as I went. And I have never seen cards run better than these did.

I will show you the difference in the tension after I changed the tension gear. The doffer was 24 inches in diameter, with ¾ inch added for the cloth, making it 24.75 inches in diameter. The big doffer gear had 193 teeth in it, the tension gear 30 teeth, and the bottom calender roll was four inches in diameter. The circumference of the doffer was 77.75 inches, and the circumference of the 4-inch calender roll was 12.56 inches. The calender roll made 6.4 turns to 1 on the doffer.

Now let us find out how many inches of sliver the 4-inch calender took away from the doffer. $12.56 \times 6.4 = 80.38$ inches. The circumference of the doffer was 77.75 inches. Now by subtracting this from the circumference speed of the calender roll, we get $80.38 - 77.75 = 2.63$ inches tension. This was not enough tension, making it necessary to run the comb high; that is, it was necessary to set the comb high to keep the end from sagging down too low.

Now with the 28-tooth tension gear, the calender roll would turn 6.85 turns to 1 on the doffer which gave me a tension of $12.56 \times 6.85 - 77.75 = 8.28$ inches instead of the 2.63 inches with the 30-tooth tension gear. With this tension I could set the comb low and the result was good running cards with no trouble at all.

Don't let anyone tell you that 8 inches is too much tension between the doffer and the calender roll. But the web should always run with a little sag in it; that is, the end should be slack between the doffer and the calender roll, so there will not be an uneven stretch.

As for the speed at which to run a comb, I would not specify any certain speed. But if the speed is a little higher than necessary, it isn't necessary to run the comb bands so taut. A taut comb band won't last as long as a slack one, and a taut band will cause the comb blades and fingers to come loose, the comb shafts to break off close to the large box, and a continuous upset of the box—and, after all, it takes more power to drive a taut band than a slack one. As to oiling the boxes, I put a little oil in mine every morning. If a man waits until he hears a box rattle before he oils it, he has waited too long.

I haven't written this in a "know-all" spirit. I thought I could help someone a little. I hope some reader will be benefited enough to write and let us know.

A. M. (GA.)

Cloth Room Methods and Problems.

EDITOR COTTON:

I do not think that contributor three-six-four-nine realized what he was starting when he wrote that "insectuous" article for "How Other Men Manage" on "The Watchdog of the Mill."

We have now with us in this passage of arms a Maine brother weaver in the May issue of COTTON. He seems to think about as much of the cloth room overseers as the rest of the boss weavers.

We clothroom men do not blame the weaving overseers for getting "out from under" as much as possible, but we do think they ought to bear some of the load and not pass it along to the clothroom boss and have him carry it all.

What must a man know about to be boss of a cloth room?

In the first place, he must know about all the defects in the cloth and from which room they come. I fully understand that it is not always the boss weaver's fault. But nine-tenths of the defects in the cloth room come from the weave shop. Where are floats, mispicks, pickouts, scratch-ups, wrong picks, wrong draws, thin streaks, thick streaks, short cuts, bad reed marks, temple marks, wrong widths and other defects made?

I am asking this of the "Pine Tree Stater." Does he realize that the reason why there are so few good clothroom overseers is that they are under paid? I know he does not expect that a man who can be a boss weaver is going to give up a forty or fifty-dollar-a-week job to take a clothroom job for half that price, and that is about what the poor cuss gets.

Speaking about myself, I have been through the carding and weaving departments spending about fifteen years in carding and three in weaving. There are probably others, and that is why some of us are onto the tricks of weaving.

Now I might get sarcastic in replying to the gentleman from Maine and others and create a laugh or two at the expense of someone else, but it would do no real good. Anyway, I don't believe contributor three-six-four-nine intended to start a permanent feud between the weavers and the clothroom men when he wrote his "Watchdog" story. He just wanted to wake us up, and he certainly has succeeded.

But even the "Pine Tree Stater" admits there are some

good clothroom men, especially his own. Perhaps that particular "Watchdog" holds the string on a "suspended sword." Who knows! Anyway, he knows the clothroom man employs girls.

But let us get to business. Very few people realize what a clothroom man has to do.

In all the time I have taken COTTON I have seen but very little about the clothroom and what I have seen lately has made me try to hold up our end of the textile game.

I would like to have some worthy brother clothroom overseer tell us about the operations of some of the rooms where he has presided as "chief mogul." I will endeavor to give a little time to this subject and so lead the way.

There are not two rooms that have exactly the same system of inspection. Where I am at present we have two mills, but we have to run the cloth separate, and have two sets of reports to make out daily and weekly.

Each mill checks up their cloth once a day. We in the clothroom run the cloth that is checked up the day previous.

I also know that we have antiquated machinery as well as methods. That is why I am writing this article to see if I can get some other overseer to come back with something about more up-to-date methods. It may help us all if we give our ideas and problems an airing first as do the carder, spinner and weaver.

We know that the clothroom is looked upon as an insignificant part of the cotton mill operation, but take away the inspection and where would the mill be? Of course, in the other rooms, everything has to be just about right, but it is not always so. The clothroom catches any number of mistakes which would not be corrected if the clothroom boss did not notify the overseers of the other departments immediately upon discovering them, thus saving a lot of poor cloth.

Our inspecting machines are very old and out of date, but serve our purposes very well. Each girl threading her machine with every double cut, as brought in from the looms, the cloth rolls being on the inside of the machine and going between two revolving brushes which takes off the loose ends, lint, etc., the cloth then passes up over the inspecting board.

My girls take out all the bunches, putting strings in for thick and thin streaks, black oil, floats and all bad places in the cloth. The uneven cloth is set aside in rolls for the overseer of weaving to inspect, as anyone can see such work better in the roll than when folded. Three girls inspect about two hundred and forty thousand yards per week of fifty-five hours.

Next comes the folding, one boy running two folders threading each machine with a double cut, marking style and yards on the cloth folded as well as in a book, keeping each style separate. This all has to be added up later by "yours truly."

Our table girl takes the cuts when folded, opening each at every string, cutting out the bad places when possible, fixing up thin streaks, narrow floats, black oil, making seconds out of the unfixable.

These seconds later are looked over by myself, and reported.

Now comes the baling, which is done by the second hand, he putting the cloth onto platform scales, that are on wheels so as to go about the room to different heaps of cloth of different styles. He puts down the yards in each double cut until fifty pieces are on the baling card. The cloth is then weighed and the weight also put on the card adding up yards, and dividing yards by pounds, giving us the average weight per pound. When this is done he puts the cloth on the press, covering the bale completely with burlap, with heavy paper on the side and top that are to be stenciled, using about five and one-third yards burlap on forty-inch goods and four and two-thirds yards on thirty-six-inch goods. Putting three bands to a bale under four hundred pounds and four bands on bales over that weight makes a neat bale. Some mills use rope on their bales, but I think it is just as cheap to use bands. We use five-eighths by .017 painted, annealed box bands. The cost of burlap, bands and buckles is about 45 cents.

Now comes the reports. The clothroom overseer having all of this to do in addition to annoying the overseer of weaving. In the reports I have to make out every week I get the pieces on the floor and the pieces baled of each style, and taking the pieces brought into the clothroom from the weave shed, compare them to see if they balance. In cutting up the cloth we call thirty yards one piece and ninety yards two pieces, there being one hundred and twenty to one hundred and twenty-five yards in a double cut, thirty yards being taken off so as to cut out one yard for bad places, thus we have a thirty-yard and a ninety-four-yard piece making three pieces. In balancing up, therefore, we must add some pieces to the amount brought in from the weave shop. When each style is balanced, then I add up the pieces brought in and the pieces on hand to get the total balance. We go on dividing the yards of each style by the pieces brought in to get the average yards per cut, getting the total yards from the folder's book by dividing the yards by average yards per pound, getting this average from the bale cards of the same week.

This gives me the theoretical pounds. Dividing the yards again by the average looms run, by days run, equals yards per loom per day. Dividing this answer to get the per cent of each style, and multiplying this product by the average looms run to get total per cent. Adding total per cents together gives me my average per cent of all styles.

Dividing the number of seconds made by pieces brought in will give me the per cent of seconds of each style. Of course we clothroom men all know that we have not as much machinery to bother us as the other overseers, but we do not have time to snooze but a very little, for it means report after report, also chase up the overseer of weaving and say to him, "Come here a minute, I have got something to show you." It is watch, watch, watch all the time for defects in the cloth. Take away the cloth room and you will shut down the mill. If we clothroom men should tell of our experiences it would fill quite a large book. It really is a puzzle to me why the superintendent will come in and say, "Seconds were pretty high this week; can't you get them down a little?" Just as though we were making them! Sometimes it gets on one's nerves. Why does everybody like to ride the overseer of the clothroom? How do they expect him to look pleasant with such things to worry him all the time. I could go on and fill two other pages about such things, but I think I will let some other *Insect* take a whack at the clothroom subject, and tell us how he handles his problems.

I. M. (CONN.)

Beater Settings and Comber Waste.

EDITOR COTTON:

Will you have some of your readers explain, through the columns of your discussion department, what the three principal points are governing the setting of the beater to the feed rolls on a cotton picker and why?

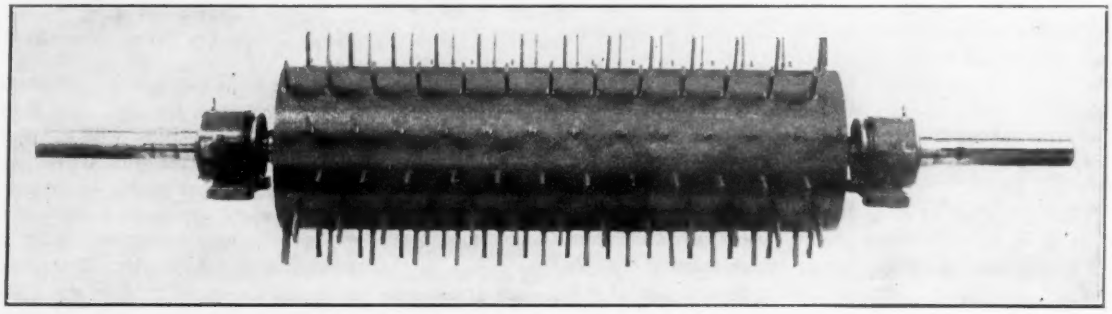
What settings and timings can be changed and how should they be altered if it is desired to decrease the percentage of waste removed by a comber? B. S. (N. C.)

Using a Buckley Beater in Intermediate and Finisher Pickers.

EDITOR COTTON:

The attached photograph of a new type of modified Buckley beater shows a construction designed for a leading New England fine goods manufacturer. This should be interesting to a number of your readers as it is, as far as the writer knows, one of the very few mills using Buckley beaters on intermediate and finisher pickers.

A small eighteen or twenty inch Buckley has been often used on breaker pickers instead of the conventional blade



beater, but as far as the writer knows there are only two mills in this country using a Buckley on intermediates and finishers.

As will readily be seen, this construction differs from the ordinary Buckley beater in that the arms project a very short distance beyond the solid part of the cylinder. The objection has frequently been raised to Buckley's on breaker pickers that the open construction of the beater made it difficult to form a good lap. The construction here illustrated, obviates that difficulty by providing so limited an air space between the cylinder and the ends of the arms that the cotton is carried around by the arms and the draft and cannot be sucked back through the beater as would be the case where the barrel of the beater is small and a large air space provided.

This mill claims some rather astounding results on long staple cottons, principally Sak. They declare that this form of beater will remove more motes and leaf whole than a blade beater or a Kirschner beater. Also a very notable increase in breaking strength and an absence of many small gouts and slugs caused apparently by the blade beater. The other mill referred to using a beater of approximately this construction reported about the same results.

The beater is of course so constructed that every portion of the lap is struck during a revolution. The arms being staggered in such manner that no two adjacent rows strike adjacent portions of the lap. The lap is torn off very smoothly and evenly with less of the fringe found where blade beaters are used. Better cleaning at lower speed is probably due to the fact that this beater sweeps the cotton over the entire grid bar sector whereas with a blade beater about 95 per cent of the cleaning is done by the first two gridbars. The draft coming up through the gridbars will suck the cotton away from these bars and through the beater so that very little benefit is derived from the lower bars in the sector.

With this carefully closed Buckley cylinder, a certain amount of cleaning action is had from practically all of the gridbars.

The loosening action of this beater is far superior to that of the blade beater as the latter relies entirely on one heavy rapid blow to dislodge foreign matter. Where, with the Buckley, a mote or large piece of leaf will not only be struck directly but, if of any size, will be struck on both sides, the arms knocking it first one way then the other and loosening it up so that the arm which strikes it a full blow can soon dislodge it with practically no loss of fiber.

The writer has examined samples of motes from this type of beater and they were vary interesting as such a large percentage of whole motes and unbroken or slightly broken leaf was found.

From what the manufacturer claims for this modified type of Buckley, it would seem to be a great thing for anyone running staple cottons and will no doubt create some interesting thought among the readers of COTTON.

T. C. (MASS.)

A Point on Combing.

EDITOR COTTON:

I am an Englishman now residing in China, in the cotton mill business here. As I have had experience with combing in England, I was much interested in the letter of "Bob (Mass.)" in the April, 1925, issue of COTTON with reference to this subject. This writer makes the statement that, "Short singles on the table do not need to be taken from the *can*, as this is not so much but what the doubling in the drawing will take care of it."

I would like to mention that in England my experience has been to induce operatives always to make work correct at each process, and thus all singles on the comber tables should be taken out, but certainly not "out of the can," as "Bob" suggests. Why not replace the incorrect sliver as it is being drawn along the table, with correct sliver? To do this we used to have a small sliver can under the comber table containing sliver, which was got direct from the table calender rollers, as can sliver is invariably of a different

hank. I really think this is a much better method than letting operatives neglect table singles, or even taking say dozens of yards out of the can after the slivers have been drafted six or more times. L. F. (CHINA)

Napping and Raising Cotton Fabrics.

EDITOR COTTON:

The subject of napping must be considered from different angles, as cotton, wool, and knit fabrics, while all using the same basic principle of napping, are treated differently to produce a perfect nap. Oftentimes a wool napper believes a perfect cotton nap cannot be produced, but with the improvements that have been made in the last few years to napping machines, together with the experiments that have been made with different styles of fabrics and fibers, it is almost safe to say that a nap can be raised on anything from silk to sail cloth. One napper even claims he can nap a piece of tissue paper, and no one has bet him he can't.

In order to treat the subject thoroughly, we will consider the napping of cotton fabrics first, and then take up woolen and knitted cloth later.

While a nap can be produced on thin cloth, it is seldom done except for special finish effects, or for later treatment, such as enameling. In this instance, the fabric is napped in order to produce a better enameling surface. The great bulk of the napping product is of heavy construction, which is used for blankets, bath robes, crib robes, and such articles.

This takes us back to the construction of the cloth. Usually the warp is medium counts, ranging anywhere from 10s to 25s, while the filling is very coarse, ranging from 2s to 6s. The warp can be made from various staples of cotton, but there is no advantage in using long stock, while the filling is almost always very short stock, running anywhere from ¾ inch to 1 inch, and is preferably of harsh feeling hairy staple, for blanket work. The filling yarn was formerly spun through the regular processes of cotton manufacture, but the modern tendency seems to be toward the wool run system, wherein the cotton is carded and rolled into a roving on a card similar to a wool card, and then twisted with a fine core yarn. With this system, the core yarn gives strength, while the roving wound around it stands out when the cloth is woven and produces a fine nap. We may see future articles regarding this system, as many mills are installing it, for coarse work.

The weaving of blanket fabric is usually done on a Jacquard loom, although dobbies are often used, but in either case the filling covers the warp so it does not show in the pattern, nor can it be torn in napping.

When the cuts are delivered from the weave room to the napping room, they are sewed together, and instead of being rolled again, are folded on large trucks about six feet wide. In the case of blanket fabrics, the cloth is given a run on each side through a breaker napper, and then run through a set of steam dry can rolls which smooth out the surface, without calendering.

In some napping rooms, the breaker napper is equipped with a steam roll which prepares the surface, but, in my opinion, this is not as satisfactory as the dry can process. The cloth is then ready for a course through the napper. Anywhere from 20 to 36 runs is given to produce a good nap. One napper can do all the work, by running the cloth through it the required number of times, and changing the speed of the napping rolls, but a series of nappers, through which the cloth passes successively, is much more satisfactory and more generally used. The first six or eight are set for breaker nappers, the next eight or ten as intermediates, and the rest finishers. The nap is in this way slowly built up and felted in.

Figure 1 shows the course of the cloth through the napping machine. The truck contains the cloth loosely folded, and the truck is pushed up to the napper sideways, so the

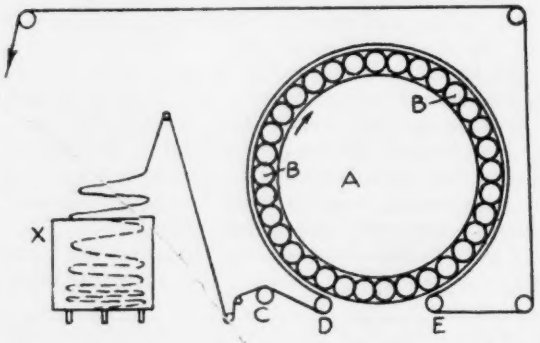


FIG. 1

cloth can be pulled up over a guide rod, and down through two small rods that put a tension on the end. The drum C is 10 inches in diameter and can be filled with steam if dry cans are not used. These rods and the drum are stationary and the cloth slides over them, thus giving the required tension. The roll D revolves and serves as a guide roll, while the roll E is covered with carpet cloth and is driven by a gear, to pull the cloth over the cylinder. The actual work of napping is done by the cylinder A, on which are mounted a series of napping rolls, shown as B. Nappers

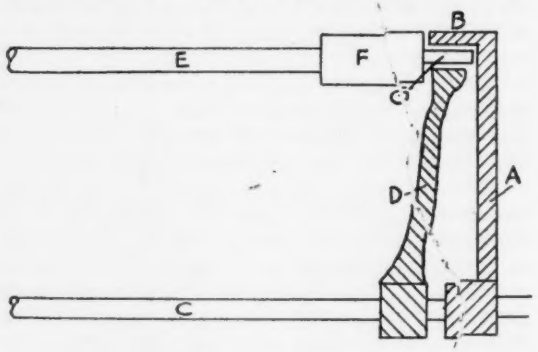


FIG 2

are built with various sizes of cylinders and numbers of napping rolls, but the modern machine has 36 napping rolls, while the old styles only had 18 or 20.

After the cloth is pulled over the cylinder it is passed over guide rolls that carry it up over the napper to the front again, where an automatic folder lays it in an empty truck, placed back of the full one that is feeding the machine. When the end of a truck of cloth is reached the napper is stopped and a full truck put in place and the end is stitched to the tail end of the previous load, with a long flexible wire. The napper is again started and when the wire comes through to the front, it is pulled out, and the end dropped

into an empty truck which replaces the full one. The trucks continue advancing around the room until the cloth has passed through the required number of napping machines.

The cylinder is made as shown in Fig. 2. The arms D are mounted on a shaft C, which is the main shaft of the machine, holding the tight and loose pulleys, and these arms D carry a rim which supports the journals G of the napping rolls E. The journals are set in boxes on this rim. The arms A, which are also mounted on the shaft C, carry flanges B which hold the napping rolls in their respective boxes. Thus it will be seen that when the cylinder is turned, the napping rolls E move forward on its surface, but are free to revolve in their boxes. The pulley F is carried by the napping rolls, each alternate roll, having its pulley on opposite ends. This is done so alternate rolls can be driven in reverse directions. A six-inch belt passes over these pulleys F and is driven through cones, so that the speed of the napping rolls can be changed. There is a belt on each side of the cylinder, and separate sets of cones to drive them, both being driven through gears from the main shaft C. The rolls D and E, Fig. 1, are driven by large gears from the main shaft.

The napping rolls are covered with napper clothing, which must be carefully ground, to be perfectly round, otherwise, the roll will catch the cloth. These rolls are covered and ground in a separate machine designed for this purpose, and are then put in the napper. They are ground as often as necessary, depending on the nature of the work and the time the machine is run.

We have seen that alternate napping rolls turn in opposite directions, that is, one roll turns with the cylinder, and one against it. The ones that turn against it are known as pile rolls, and the other ones as counter-pile rolls. The pile rolls produce the nap, while the counter-pile rolls regulate the quality of the nap. There is a difference in the wire used on clothing the two rolls, one having more bend than the other. The amount of napping done is regulated by the speed of the napping rolls, which can be changed by the cones which drive them. The respective napper machines are set so that as the cloth advances the nap will be alternately heavy and light, which causes the nap to be felted in as the cloth advances. The quality of nap desired of course governs the number of runs to be given. For ordinary blanket work 24 runs are sufficient, but for very heavy work 36 runs are often given. About 20 blankets a minute is a good production speed on each napper.

Each napper has a fan placed under the cylinder and connected to a suction pipe. A stripper roll set under the cylinder clears the napper flocks or waste out of the napping rolls and throws it into the suction pipe, which conveys it to the dust hole. The dust hole receives all the pipes from each napper, and is built similar to a picker room dust hole, the different pipes having dampers so the dust cannot be blown back. The deposite in this hole is called napper flocks and contains short fibers which can be put back through waste pickers and saved.

The napping of cotton goods has grown to such proportions that today it probably exceeds both woolen and knit goods napping. The principle involved is the same with all classes of napping but the machines differ slightly in construction. We have seen that the amount of nap put on cotton goods is regulated by the speed of the napping rolls, which is changed by means of the cone drive. The amount of nap put on woolen goods is regulated by the contact of the cloth on the napping rolls and is regulated by an adjustable arch, by which very delicate changes of contact can be obtained, and the machine thus set for different weight goods and amount of nap. The tension on the cloth is also adjustable and provides a second means of regulating the nap.

The machine is constructed the same as the cotton napper already described, only omitting the cone drive. The wire used is galvanized steel and is non-corrosive, but as this is not proof against acids, one concern makes a special bronze clothing which is not damaged by any acid in the wool. There is a stripper roll under the cylinder which cleans the napper flocks out of the napping rolls, and helps to keep the wire sharp. The wire must be kept sharp and is ground as necessary, depending on the work run.

The napping of knit goods was formerly done on a regular one-cylinder napper, built the same as the cotton napper, but lately a two-cylinder napper has been built which naps both sides of the cloth at one run without any turning mechanism, which was necessary with the one-cylinder napper. This new napper has a narrow cylinder, thus eliminating the danger of the napping rolls ballooning, and springing at their centers, as they did when built in excessive lengths. Each cylinder has twenty napping rolls.

The napping of knit goods is seldom done in conjunction with cotton or woolen napping and can be considered as a separate trade.

While the foregoing covers only the outlines of napping, as it were, it may start some readers to thinking and produce some further correspondence on this interesting but little discussed method of finishing fabrics.

CONTRIBUTOR NO. 262.

Double Starched or Pasted Buckram.

EDITOR COTTON:

There has lately been put upon the market a species of buckram formed of two pieces of cloth pasted together, back to back. One has been an ordinary book muslin or a one and one leno check and the other about a 50 x 50 or lighter regular bag goods cloth. These starched separately and then pasted together form a better buckram than is ordinarily used.

Buckram when finished is as stiff, or even slightly stiffer, than a piece of card board of an equal thickness. This cloth is stiffened twice on a Scotch mangle (dried in between) and the rolls are usually run about five to one—they are run on both sides—back and face. The mixing for this, say 16 to 17, is six cans of flour paste at 30 degrees twaddle, one smaller can of corn starch at eight degrees twaddle, six cans of china clay paste and a little glue. This is for 100 gallons.

For label or advertising cloths rather low qualities of cloths are used. This is only to hold the filling, which is the most important of the label. In its most convenient form generally a 12 x 12 cloth is used, but other equally low makes can be used. In this case the goods are run on the Scotch mangle with as much friction as possible on the face twice as before and calendered lightly between and after. Sometimes to prevent the ink running, the goods have to be run three times.

The mixing for this is four cans flour paste, 20 pounds potato starch, five cans of mineral, five cans of china clay, 35 pounds of fish glue, five pounds of alum, seven pounds of wax, and blue to shade. Mix the flour paste and the potato starch and the water and just bring to a boil. Then cool and stir in the mineral, china clay and wax. Dissolve the fish glue and the alum separately and add to the rest, bring the whole to 150 degrees F. and add sufficient water to bring up to a 100 gallon mixing.

Now then, book muslin, which is one of the cloths used in this double buckram cloth which I have got, is a textile name that is somewhat of a misnomer, having no connection with fabrics used for book coverings. These goods are very extensively used for stiffening goods and for lining clothing and making foundations for ladies' hats, and they are used more for their feel and finish than their appearance. They vary in looks from a plain weave to a small check, as they are made more for utility than they are for effect, and fancy weaves are therefore not necessary nor are they called for. One of the principal weaves is a leno one and crossing one, and before finishing, the goods feel very sleazy, but the effect of finishing is made to change the cloth into a very stiff, board-like fabric. Goods that are for linings are sized the least, but goods that are for stiffening and millinery purposes are sized heavily.

After being woven and bleached, the cloth is washed, dried, sized, dried and folded as desired, no burling or singeing or shearing is required, as perfect cloth is not essential absolutely, and the glue and size, combined with the pressing, lays the loose fibers. When sizing, the cloth passes direct through the size box and onto the drying cylinders. If a glaze finish is required, the goods are subjected to pressure by the heated rollers of the calendering frame. The sizing substances are usually glue, gum flour and size of variable proportions with water mixed to the desired consistency. The weight of size in a piece will vary from about five per cent to 40 per cent of its entire weight.

I have before me a letter regarding such goods which may come in here. The writer says: "The way I have been doing this is to give them a straight corn finish, passing them through the starch, then through the nip onto the six cans, then through a tenter frame. But I find that in doing it this way that I get all starch spots when we go above 40 pounds, as the starch in the box gets so heavy after running a couple of hours that we can hardly pull them through, and they seem to break up easily on handling."

This writer is all right in every way, but he did not thin down his size by boiling a long time or by adding diastafor to it; had he done so, the size would be thinner and possess just the same stiffening power and run easily through the starch and without getting stiffer as it got colder.

The following recipes are made and then thinned down with diastafor:

For very light calico lining or buckrams: Boil up ten pounds of starch, ten pounds of wheat starch, five pounds wheat flour, ½ pound of yellow wax, ½ pound of tallow, ¼ pound of glue, with 15 gallons of water. Boil well and cool to 140 degrees F., then add, previously dissolved in *lukewarm* water, 1½ pounds of diastafor. On no account must the diastafor go into liquor over 150 degrees F., for it will be no good above this heat and will spoil. The Berlin recipe is somewhat similar, and the Augsberg is like this:

10 pounds potato starch
5 pounds wheat starch
Cool to 140 degrees, then add:
1 pound diastafor
2 pounds glue
½ pound wax

and water sufficient to make 13 or 14 gallons altogether.

Starch in all of the foregoing, dry and again starch twice, each time increasing the pressure of the starch rolls.

With regard to this recipe, I would say that corn starch is quite as good, and tallow, but each finisher will use his own judgment on this and be guided by local conditions. I, of course, only point out the way to him.

Before I go into the pasting of two cloths together, I will take up the soluble starch problem which seems to bother more or less our various correspondents. The solvent used for starch by many establishments on the continent is diastafor, a malt preparation of very diastatic power, and it has proved quite superior to either chemical or mechanical treatment in the conversion of starch into a soluble form. It is quite free from acids and fatty substances and has no action upon vegetable substances. As it is completely soluble in lukewarm water it is immediately ready for use, it is therefore convenient to use and economizes time. It is used for the preparation of supple and closely adherent finishes. Starch is converted by its fermentive action into soluble starch, dextrine and maltose and a highly satisfactory basis for finishes is a preparation containing these ingredients in soluble proportions. The further addition of salts, fats, glue, etc., to this base gives the necessary character for all special purposes. The starch basis prepared with diastafor is noted for the evenness with which it penetrates and is absorbed by the fibers and the full handle given to the goods. The size possesses extraordinary adhesive qualities and therefore gives a supple and closely adherent finish. It does not dust, nor harden or contract by exposure and it takes a high finish if calendered and is very resistant to weather.

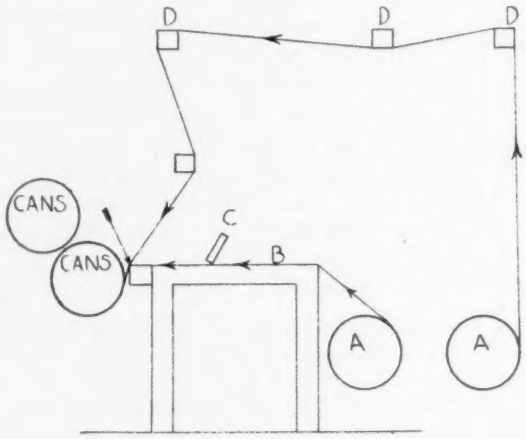
A homogeneous paste is first made by mixing the dry starch with water and then boiling it well, i.e., bring it to a boil then cool it down to 120 degrees F., and add, previously dissolved in *lukewarm* water, about two or three per cent of diastafor. The action of the diastafor must not be prolonged beyond the point when the paste becomes thin and transparent, which takes about half an hour. During this period it must be stirred constantly so that no deposit is formed and that liquefaction takes evenly throughout.

The further action of the diastafor is stopped at once by a short boil or the addition of soda, in fact the steam can be turned on as soon as the diastafor has been thoroughly stirred in and then all the other materials can be added.

Then again the starch and most of the water can be added and the whole *boiled* thin. In this case it takes one hour or so. The finisher can tell when his starch has boiled thin—the starch is transparent, but do not boil it beyond this. This saves the diastafor but takes longer, and the finisher must remember this—that corn starch can be used alone in all of these operations, but it takes longer to boil corn starch, and that the boiling must be prolonged until all is thin or until a portion of the starch is converted into dextrin.

For the goods in question I should boil up either in the

regular three boll starch mangle or on the mangle connected with the dryer a starch made something like this: 25 pounds of corn starch and 15 gallons of water. Boil well and cool to 120 degrees F. Then add, previously dissolved in lukewarm water, 1½ pounds of diastafor, stir well and then turn on the live steam and then add, previously dissolved, one pound of tallow, two pounds of comminuted glue and two pounds glucose, making altogether about 16 gallons of starch. Run the two cloths, bleached and dried, separately in this starch on the tenter and finish the cloth the



same width if possible. Run them (one or both) overhead in the starch and get them as wet as possible—dry thoroughly. Then run and paste them together on the cans, using a device something like the drawing: *a a* are the two rolls of cloth to be pasted together and they follow the arrow lines round the dry cans, twenty or so, and are pasted and dried; *b* is the table on which the paste is put on the lower cloth; and *c* is the doctor which scrapes off the surplus size. Then *d d d d*, etc., are the wooden bars which act as guides and straighteners for the cloth.

The paste is thrown on the top of the lower goods on the table *b*, with a scoop, and the doctor *c*, is capable of raising or lowering. Such a machine is made by the Providence Machine Co. It is something I originated but has many new points and is better now.

The two goods, one or both being sized previously, are pasted together at the point shown by the arrow in the sketch, the paste being on the lower cloth on the table. The paste, which had better be made by paste makers, is made as follows: 25 pounds of corn starch to 15 gallons of water. Boil this together well, and then cool to 120 degrees F., and then add, previously dissolved in lukewarm water, about two pounds of diastafor. Stir this in well and then turn on the steam and add at once, previously dissolved, five pounds of comminuted glue and five pounds of sugar or glucose. Starch must boil thin and clear and should come out about 16 gallons. It must be remembered that more sugar or glucose will render it more adhesive and that more glue will render it more stiff and more oil will render it more elastic. Long boiling will do as well as diastafor, and that corn starch, unlike potato starch, cannot be spoiled in the boiling.

W. B. (MAINE)

Submit your mill problem to COTTON's readers.

Silver Lappers, Combers and Combing.

EDITOR COTTON:

I have read the letter of "M. W. H. (Mass.)," "More Fine Points on Combing," in the December issue of COTTON, and I notice that he does not agree with me regarding the amount of cotton combed by the half lap and the top comb that I wrote about in the September issue of COTTON. He also states that a man can study the action of combers very easily and with less ability along mechanical lines than it takes to follow some of the controversies which we read.

Since I started writing for the discussion department, I have always tried to make my letters easy to read and to understand. I have always given reasons for all statements made, so if any of my letters are hard to understand and follow, and read as though the comber is a difficult machine to understand, it is evident that the reader is not thoroughly acquainted with the actions of a comber and the passage of the cotton through the machine. That is all that is necessary to follow the line of reasoning in my letters. My letter in the Sepetmber issue would have been more confusing if I had gone into detail on the parts that I discussed, but I made it as brief as possible while trying to make it interesting and valuable to the reader.

While it may be easy to study the actions of a comber as "M. W. H." states, yet one can be easily misled into taking that study too lightly as I shall try to show by using "M. W. H.'s" figures which he gave in the December issue of COTTON.

He states that his combers feed 19.11 inches per minute, the cylinder making 126 r.p.m., or: $126 \div 19.11 = 6.6$ times that the half lap passes through every inch of cotton delivered to it, or in other words, each turn of the half lap combs 1/6 of an inch of cotton. Then he goes on to say, "When the half lap has combed and the nippers start to open, the feed roll moves, but it only moves 1/5 of an inch and delivers about 1/3 of an inch of cotton." Now "M. W. H." must be wrong in one of the above statements and I think that it is the former as I shall show.

On all single nip combers, for every revolution of the cylinder or half lap, the feed roll moves and delivers the length of cotton which it is set or timed to deliver. Therefore, if "M. W. H." is delivering about 1/3 of an inch per nip, $126 \times .333 = 41.958$ inches per minute fed and $126 \div 41.958 = 3.005$ times which the half lap passes through each inch of cotton delivered, or in other words, each turn of the half lap combs about 1/3 of an inch of cotton if we are to follow "M. W. H.'s" reasoning.

I still maintain that my claim holds good regarding the amount of cotton combed by the half lap and the top comb, in spite of the fact that "M. W. H. says that I had better review it a trifle. He will find that his own statements and figures support my claim if he will study them a little. Disregarding his statement that each turn of the half lap combs about 1/6 of an inch of cotton for the present, but using the statement that 1/5 of a turn delivers about 1/3 of an inch of cotton which shows that 41.958 inches of cotton is fed per minute when the cylinder is turning 126 r.p.m. Then each turn of the half lap combs 1/3 of an inch in place of 1/6 of an inch of cotton. Then about the time that the tips of the fibers come under the bite of the detaching rolls, the top comb penetrates the fibers and comb. Then in working 1¼-inch cotton the half lap has

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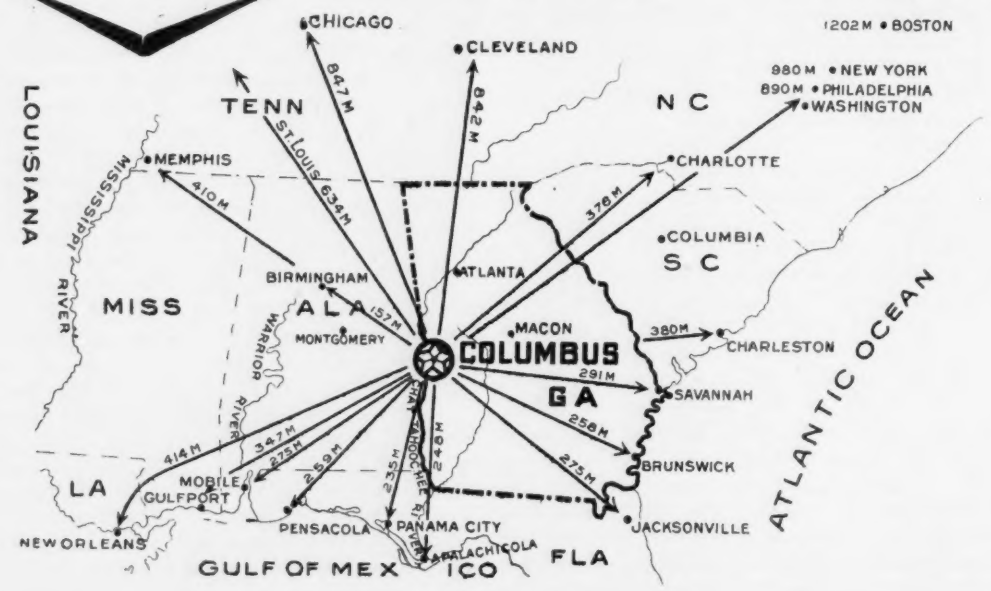

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combed only ⅛ of an inch and there is nearly 1 inch of cotton or fibers to be combed by the top comb. Therefore the only combing which the remaining length gets is from the top comb by having the fibers drawn through it by the detaching motion of the rolls for the tips of the 1/3 of an inch which has been combed by the half lap has to come under the bite of the detaching rolls when the latter starts to detach. So until the detaching is completed, the rolls are drawing the fibers gripped, from the bulk of the cotton and the half lap does not have an opportunity of combing the fibers so drawn.

"M. W. H." says, "When the tips of the fibers reach the bite of the detaching rolls, it (the bunch of fibers) has been acted upon by the half lap not once but five or six times." This cannot be so for the following reason: If the half lap passes through the cotton five or six times to every length of cotton held in the nippers, it would be necessary for the detaching motion to be idle while the half lap made five or six revolutions—at least it could not detach during the time that the half lap was making these five or six revolutions or it would interefere with the action of the half lap. It is evident that this is not so, as the detaching motion operates every time the half lap has combed the fringe of cotton hanging from the nippers.

In comparing the amount fed to the number of revolutions per minute, the results show the number of times that the half lap passes through the cotton per inch and the amount combed each revolution. But the half lap has not passed through that number of times every inch of the length drawn forward each nip or detaching movement. It has only passed through once and the amount worked by the half lap during that passage is that which is hanging from the nipper and it is more than 1/6 or 1/3 of an inch. For to get good combing by the half lap, besides setting the knife close, the fibers must be in at least two rows of needles at once and another row entering before one has passed from it. By this method the fibers receive good parallelization. As there are 17 rows of needles on the half lap with ¼ of an inch between them the needles cover 4 inches. If the fibers are in two rows at one time and a third row entering before one of the previous two leaves it, it is necessary that the fibers hang approximately ½ of an inch from the nippers.

I think that I illustrated clearly in my September letter to COTTON the amount of cotton combed by the half lap and top comb. This letter contains references to the September letter and if "M. W. H." reads his own letter thoroughly in the December issue, he will find that he is supporting what I stated in my September letter. "The feed roll must be set from the detaching rolls slightly over the staple so that the tip ends of the combed fibers will be free from the bite of the feed roll." Why is that necessary? So that the detaching rolls can draw the remaining lengths (which have not been touched by the half lap) of fibers which they have gripped, freely and without hinderance, from the bulk of cotton or the lap, (and the bulk of cotton from which the fibers are drawn is increased in length by the amount fed.)

"M. W. H.'s" figures are all right in theory but they will not work out in practice for, even while feeding 41.958 or 19.11 inches per minute and the cylinder making 126 r.p.m., which shows 1/3 or 1/6 of an inch combed each turn of the half lap, and from "M. W. H.'s" angle that is the amount of the lap combed per nip. Let us go a little further and see how many inches are detached by the detaching roll per minute in comparison with the length of cotton fed and then divide that r.p.m. of the half lap by the combined lengths detached and I think that it will give "M. W. H." some food for thought. However, I do not want him or any of the other readers to become confused by the statement—the combined length detached. In finding the latter do not figure what your calender rolls on your table delivers per minute, as the fibers in the sliver have been doubled for part of the fibers of web which forms the sliver are returned when the backing off takes place. Figuring the amount fed and the revolutions of the half lap would lead one to believe that the half lap combs nearly all of the fibers fed. However, by finding the length detached on each detaching motion and multiply that length by the number of nips per minute, then dividing by the r.p.m. of the half lap, one will find approximately the length that the half lap would have to comb. Or if one divides the length detached per minute by the revolutions of the half lap he will see that the half lap does not pass through the cotton combed any five or six times per inch. I did not say that a man could accurately measure the length of the fibers acted upon by the half lap and the top comb in my letter in September. I did say, to measure the lengths of the fibers held by the nipper if possible and then compare it with the length detached. I know that it is difficult to measure correctly the length of the cotton hanging from the nipper unless the person takes extreme pains, but the detached length can be computed—but then the piecing must begin as soon as the detaching starts which is not always advisable. But in measuring the length of the cotton detached the readers must bear in mind that the cotton relaxes and takes its natural wavy form when in such a state.

I think that if "M. W. H." tried the experiment which he wrote about regarding the working of the half lap, he had a sliver pan full of nice bunches, if he ran any length of time, and if the comber he experimented on has as long a backing off motion as a Nasmith he would take out waste which contained long as well as short fibers. Furthermore, I fail to see how the fibers would get parallelized except those which were drawn through the top comb after the latter had penetrated the cotton. (For I have tried that experiment myself.) Because the tip of the lap would be held between the roll and segment on a Heilman type and between the steel and leather detaching rolls on a Nasmith type, and before the top comb penetrated the cotton and the detaching motion draws the fibers forward, what parallelizing action has worked upon the cotton from the bite of the roll to the point where the comb enters the cotton. None. And the rest of the length drawn through the top comb gets mighty little as the tip of the cotton sheet has not been worked by the half lap. For besides having that sheet of cotton pulled through it, the comb is holding other fibers (long and short) that do not come under the bite of the roll and segment, or the rolls. Realizing the parallelization that the cotton receives in preparatory processes before it reaches the comber, I still think that the half lap

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starts to give the fibers the best parallelization that they receive throughout the mill and that the top comb parallelizes the remaining lengths of fibers.

Just because the comber has close settings it does not indicate in practice that it is a source of trouble. It is essential to have close setting to do the work that the preparatory machine cannot do—not, should do—for that is why the comber is in the mills today.

"M. W. H." says, "No comber was ever built to take out leaf except what falls out the same as it would on a drawing frame." I would like to say that from my practical experience that all the leaf removed does not fall out and that the leaf is one of the impurities which comes within the cleaning abilities of the comber. It may be of interest to the readers to know that the cotton comber was originally built for the woolen trade and was introduced to the cotton trade by John Hetherington & Son, of Manchester, England, in 1850 and was accepted by the latter trade as a process essential to the production of the fine quality yarns. By removing short fibers, neps, leaf, and other impurities, it opened the way to the spinning of finer counts of yarn.

From my practical experience on combers I have found, in a way of speaking, that the comber is a good grader of cotton. Meaning that if a lot of cotton coming through the mill contains more waste than usual, the waste percentages goes up, and vice versa, if the cotton contains less waste, the waste percentage falls with the adjustments on the combers remaining the same. The comber man can approximately tell what grade of cotton is being fed in at the picker room if he keeps track of his waste percentage every week.

"M. W. H." has put a query for the readers of COTTON to answer relating to a change that he made in his sliver lapper drawing roll settings. He stated that he is working 1¼ cotton and using 1 9/16 and 1 15/16 setting and getting a 565 grain lap. Using the same cotton and with no other change except increasing his roll settings to 1⅞ and 2¼ his lap became 20 grains lighter immediately. He admits that the lap looks as good as it did before the change, perhaps a little better. He ran this way for several days and then changed back to his old settings as he did not see enough advantage to pay to change all his lappers over.

In attempting to give a reason for this change in the weight of the lap, I am taking it for granted that "M. W. H." is sizing his sliver lappers daily. If that is true, did he size it immediately before making the change? This would be necessary as the lapper might have been running light due to the fact that some of the slivers may have been from cards recently stripped and etc. However, I shall assume that the lap was sized before the change and every day during the test, and that the lap ran consistently about 20 grains lighter. Also that his roller gearing was o.k. as I see that he opened his rolls up as far as the stands would allow.

The first place to look for the solution of the problem is in the rolls. (As the machine makes no waste, the state of the cotton at this process is in the bulk.) The bottom steel rolls being positively driven, turn the top leather rolls which are weighted down upon them. Whether there is any slippage between the top and bottom rolls when they are running without cotton is doubtful but it is generally

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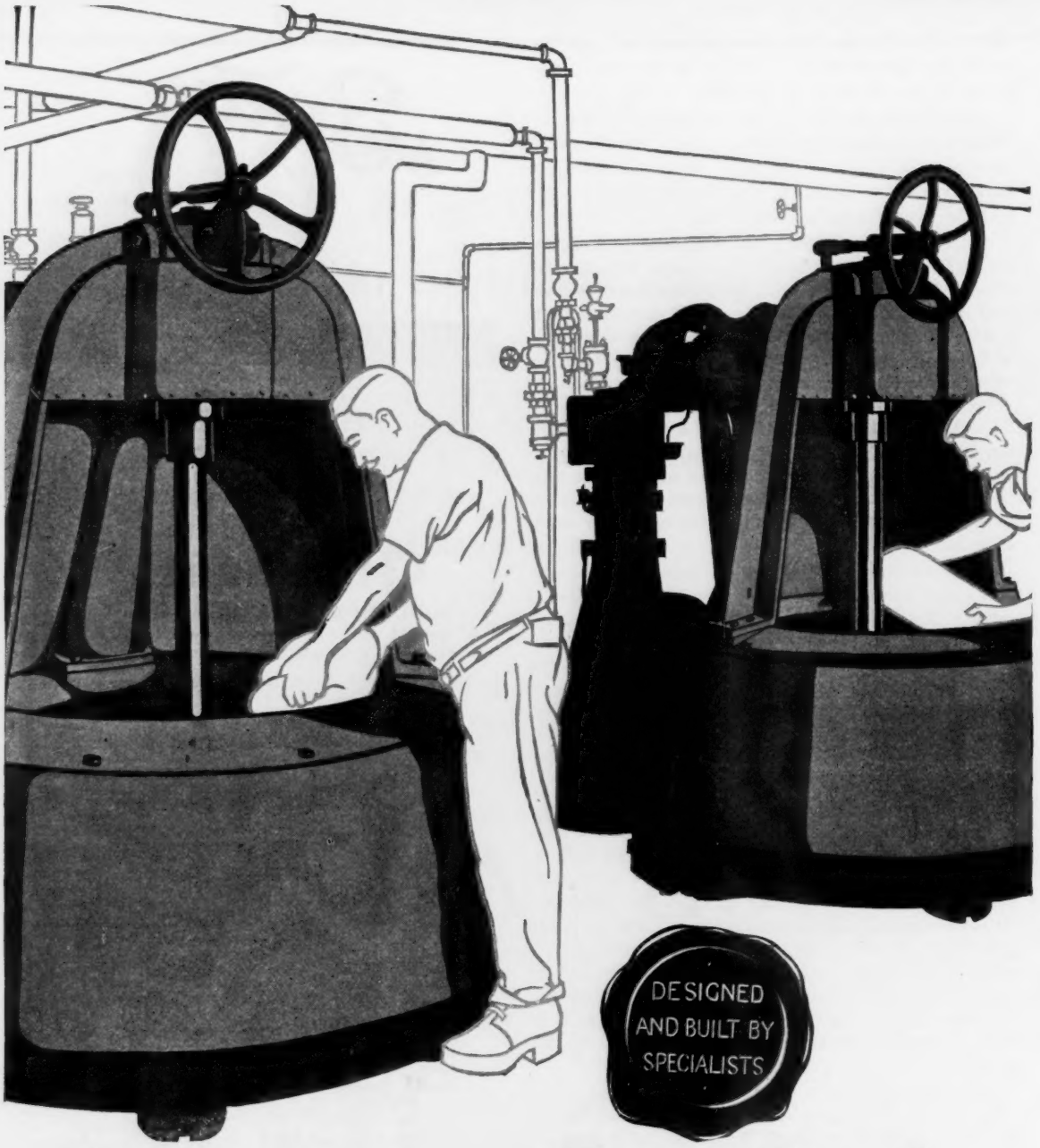

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admitted that there is a certain amount when cotton is running through. So, although "M. W. H.'s" rolls on his closer settings are wider than the staple of his cotton, the bulk of the cotton coming through the first pair of rolls is closer to the bite of the second pair of rolls than when using the wider setting. The second pair of rolls, turning faster than the first, have a better chance of drawing more fibers than with the wider setting. If such is the case, it means that there is more cotton between the second pair of rolls which will cause the top leather roll to move further away from the bottom roll which gives it the motion. Even taking into consideration that the cotton is compacted between the rolls and the weights used, the same driving effect is not felt from the bottom roll. So when the setting was increased to 1⅞ and 2¼ the bite of the rolls were moved 5/16 of an inch further apart. The cotton coming through the first rolls is the same in both cases. When the bite of the second rolls is moved 5/16 of an inch further away from the first rolls, the second rolls find it easier to draft as the first rolls do not hold the cotton as hard. This cuts down the slippage of the second rolls and has the same effect as increasing your draft. The same applies to second and third pairs of rolls. The lap probably looked better due to the fact that the rolls were able to bite evener. As I stated above, providing that "M. W. H." sized his lap before and during the experiment and such a difference did exist, I think that the above explanation will solve the problem.

Some of the readers may think that I have gone into a delicate point in my efforts to explain the decrease in the weight of the lap. But, upon thought, they will see that the cotton entering was the same in both cases if the gearing was not changed, so that the decrease in weight could only come from an increase in the draft.

I trust that my reply to "M. W. H." will prove my previous claim as to the amount combed by the half lap and the top comb. If he still holds that his statement or claim in the December issue is good, I ask him to prove where I am wrong, give reasons and illustrations of the passage of cotton through the comber, the action of the half lap and top comb in working the cotton in the way that I have. I fully understand the angle "M. W. H." is basing his claim upon, but because the half lap combs in the neighborhood of the amount fed, he cannot apply that to the amount detached which I have shown to be much greater in length. It has always been my contention that the results (combed sliver) shows that the half lap cannot have combed more than 50 per cent of the length detached and if the half lap could be made to pass 5 or 6 times through the length detached, we would be able to eliminate practically all nep and leaf.

I trust I shall see more written about combers as I am positive that this discussion will bring out some interesting and profitable information. Jock (Mass.)

Spindles and Travelers.

EDITOR COTTON:

I notice in the May issue of COTTON that "H. H. Y. (China)" is stepping in as a peace-maker, offering a compromise for the spindle-twisters and the "antis" or traveler-twisters.

To my mind, this question has about the same age and

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relation to science as "Why does a hen cross the road?" Going back in the art of spinning, we find the good housewife spinning with her spindle; the only "traveler" present being the one troubling the family mutt on the kitchen rug. Advancing, we find the flyer parked on the top of a spindle, also the cap spinning, where a cup-shaped device gives proper tension and guides the yarn in layers up and down on the bobbin. It seems to be hardly worth while dwelling on the action of the traveler on mules, as he is usually a barefooted individual who knows more cuss words than a pirate and whose only joy in life is bawling out a small being called a back-boy. This is a traveler worthy of the name; on some jobs he is more like a shuttle than a traveler. Another system, demonstrated at the cotton centennial at Pawtucket some years ago, was, as I remember it, a hard rubber flexible ring that snapped inside the flange of an ordinary spinning ring. The yarn ran around outside of the flexible ring with sufficient tension, and being inside the spinning ring, guided the yarn in the usual way. There are a half a dozen ways of getting twist in the yarn without the traveler, but none that I know of without the spindle.

Now that we have spoken and the subject is closed for all time (! ! !), let us give the traveler credit as there is probably no invention in the industry more important.

Referring again to "H. H. Y.'s" letter, and quoting him exactly, he says, "Stop a ring frame and turn the traveler around with the finger while the spindle stands still—and see what happens. Twist in the yarn would result." Instead of "twist will result," he should have said "one busted thread," as that is exactly what would happen in a case of this kind. J. M. (CONN.)

Finishing a Slate Drill.

EDITOR COTTON:

I would be glad to have some information through your discussion section on the way to go about finishing grey 37-inch 3.95-yard drills that are to be finished 35 inches wide. I am attaching a sample that will indicate the finish desired on this class of material. M. K. (WIS.)

EDITOR COTTON:

There are two ways in which the sample may be finished; in both, the dyeing, mangling heavily without water if direct dyes are used, and drying on the cylinders are the same. In the first instance the goods must be starched on the back only, either on a two-bowled starch mangle or on a machine used for that purpose and fixed at the back of the cans. The goods must pass directly from the back filler (either mangle or machine) to six or eight dry cans and a 100-foot tenter, run straight away. The goods must be dried on the back on the cans to raise the twill. To do this either the top or the bottom row, as the case may be, of the drying cylinders must be run cold. The hot row of the cylinders must come next to the back of the goods. After drying to width the goods must be allowed to cool and then conditioned on the sprinkling frame and allowed to lie for two hours, then folded up; this without any calendering, etc. The starch should be:

80 pounds yellow dextrin
2 gallons oleine oil (50 per cent)

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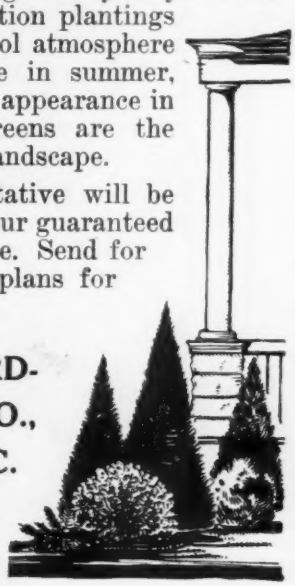

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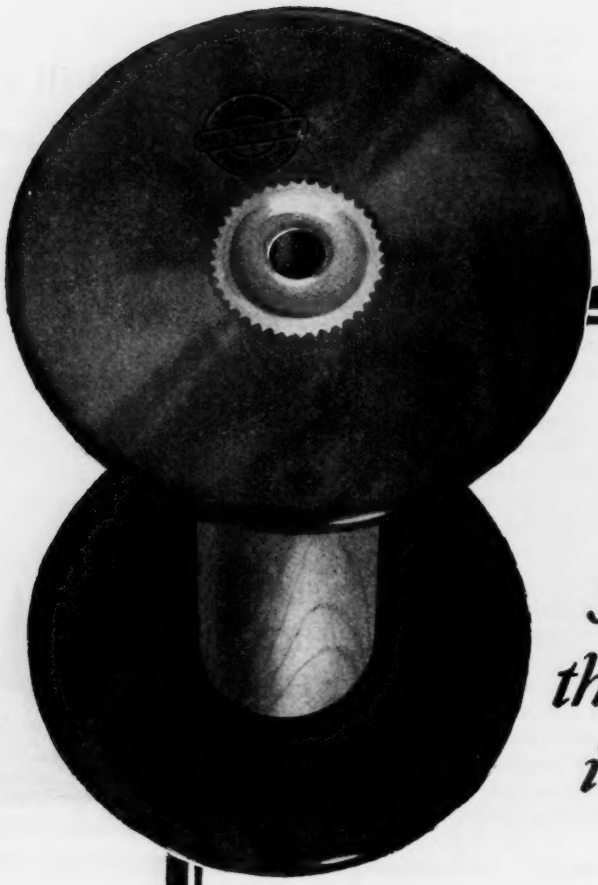

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Eliminate your spool replacement expense.

Eliminate loss of yarn due to spools (in many mills this loss runs into thousands of dollars).

Eliminate all possibility of injury to employees from rough or slivered spools.

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Eliminate spooler kinks and knots due to spools.

Eliminate broken ends on your warpers due to spools and thus increase warper production 20% to 30%.

Materially improve the quality of your warps.

And thus better the quality and increase the production in your weave room.

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Dissolve but do not boil and make up to 100 gallons altogether.

The second way is to dye and dry as before. Then starch the goods overhead on a 3-bowl mangle and finish as before or on all tentering frames, the starch being made with:

150 pounds corn starch
10 pounds monopole oil
300 pounds Glauber's salt
200 gallons water.

The starch and Glauber's salt and water are put in cold and boiled well until thin, or say about 45 minutes or one hour; then add, after boiling, the monopole oil and stir it in well. The whole should come up or measure up to not more than 200 or 225 gallons.

This is only tentative; the finisher must use his judgment, as local conditions may govern this. The finish, i.e., the drying is the same, or if too stiff the goods must be lightly broken down on a wooden calender, but then they will be narrower in width. W. B. (ME.)

Securing Greater Penetration at the Slasher.

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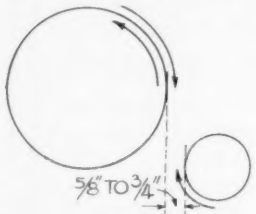
This superintendent had been having a great deal of trouble with lack of penetration on the broadcloth and one day while showing a distinguished English fine goods manufacturer through his plant he asked this gentleman if he could help him out of this trouble. The visitor said he knew exactly what was the matter, that he had often had the same trouble himself until he learned how to remedy it by placing the immersion roll closer to the brass size roll.

The drawings, Figures 1 and 2, are illustrations of what happens. Figure 1 shows the ordinary method of mount-



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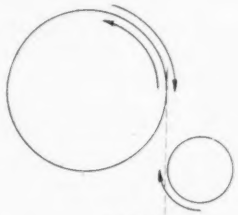
FIG 2

ing the immersion roll so that there will be plenty of clearance between the two rollers. The immersion roll often misses the size roll on the way down 5/8 to 3/4 of an inch. The arrows outside of the roll indicate the direction in which the size is moving. The arrow inside the large roll indicates the direction in which that roll moves, which is of course opposite to the movement of the size running back from the squeeze roller. Naturally, the closer together these rollers are placed the more tendency there will be for the size to pile up at the point where that running from the top of the size roll meets that being forced up by the rotation of the two rollers.

Figure 2 shows the immersion roll moved as close to the size roll as is possible with sufficient clearance to allow the

Do Your Trucking Over Head

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Anything about a textile mill that can be trucked can be handled by a Mathews Conveying System.

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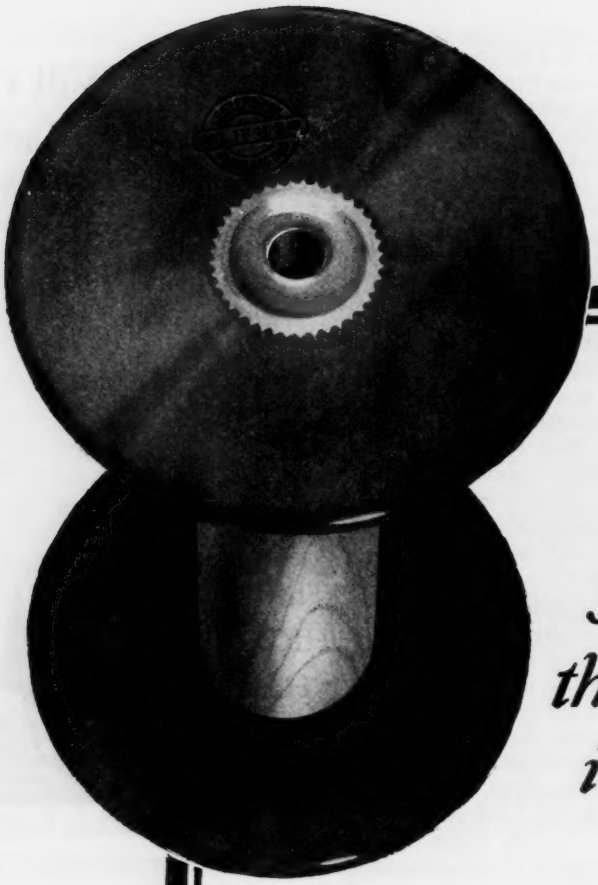

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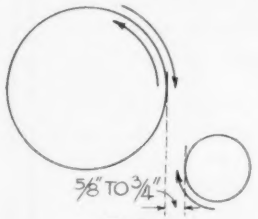

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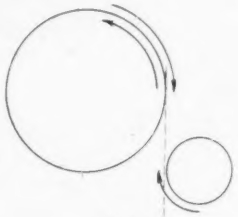
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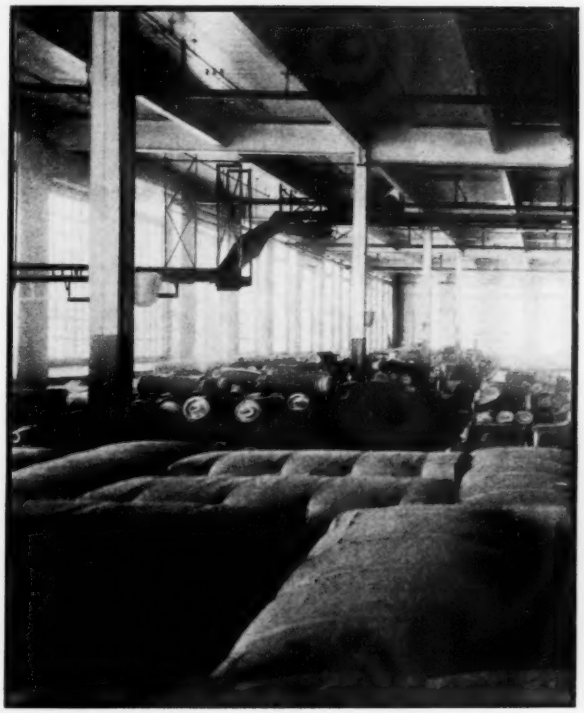

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two rolls to pass. I have watched the warps running on these slashers with the immersion rolls set up close and it certainly appears, at least, that the warp remains in an appreciably thicker layer of hot size than is the case where the immersion roll is far enough away so that the size can readily run off of the size roll. This superintendent claims that he has derived great benefit from this slight change.

T. C. (Mass.)

The Human Side of Manufacturing.

Editor Cotton:

As there has been so much written on the machinery end of the cotton mill business I feel that there should be something said from the human element side, so I will try and say a few things in regard to the human element in the cotton mill industry.

In looking over all the latest machines last fall at the exhibit in Greenville, S. C., it seemed to me that they were right up to the last minute in automatic machines, still, I saw no machine that did not have to have a human being to look after it. So, if we must have human beings to look after our machines it behooves us to have as intelligent ones as we can possibly get.

There was a time when some mill men were of the opinion that all common operatives in the mill should be ignorant; the bigger the ignoramus the better he suited the mill. I do not mean crazy, just ignorant. However, I am glad to know that that kind of a spirit is fast departing from our industry, though we may still have a few men left who take that attitude.

I have known men to work side by side for months without ever giving out any information about themselves. All one got had to be picked up on the side and even that had to be kept pretty quiet.

Beginning with the superintendent. He should be a man who knows some part of the mill experimentally and should have some knowledge of all departments. Above all, he should be clean morally; should not use profane language and should not be a "liquor head." Neither should he be a "know-all." On the other hand, he should be approachable, considerate, firm and honest. He should not promise things which he cannot do. He should look after his help, such help consisting of the overseers of the different departments. Next is the overseer. As a general rule you will find more overseers than superintendents with swelled heads. One reason for this I think, is because we have more overseers than we have superintendents, and another reason is that the mill managers try to pick men for superintendents with more education. The better educated a man is the less he is afflicted with the swelled head, as a rule. Another reason is that the majority of superintendents have already been overseers so long that they have collected a few more dollars than they had ever had before and have learned something of leadership while they were serving as overseers.

Take a poor fellow who has never before had enough money at one time to buy two real nice shirts, a good suit of clothes with an extra pair of pants and one of these fancy vests, and put him in a position where he can do this and where he can tell the fellows below him to do this or that and have the authority to advise them that they can either do what he says or move, I tell you if that fellow

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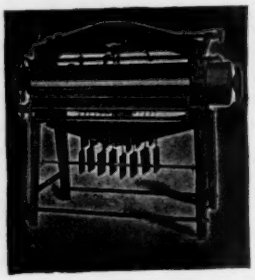

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hasn't had pretty good training, he is going to fly the coop before he knows it. I have seen lots of men who had to be held under by some well balanced person until the reaction could take place. However, in some instances the reaction never takes place, but they go from bad to worse.

An overseer should never forget the fact, when he is dealing with operatives, that he is dealing with human beings who have the most sensitive organisms of any living creatures. He must remember that at one time he was where his help is now—a sweeper, doffer, spinner, weaver, fixer, frame hand, card hand or whatever the job might have been. He must remember that the most insignificant job in the mill (if there be such a job) is just as important as any other job and requires some human being to look after it.

An overseer should speak to his help at all times just as he would want his superintendent to speak to him. He should never feel himself, humanly speaking, better than anyone working for him, and I think this should apply from the president on down to section man. The help should be made to know that they are appreciated by the foreman, and not that all they care for is the dollar. The hope of reward is the greatest asset in the life of most everyone, and when operatives feel that they are not cared for except for the money they make for their employers, to a certain extent their hopes and ambitions are deadened.

There are a great many rewards in this life besides money—a good word, a smile, a look, a little praise, sometimes helps wonderfully to keep an employee struggling on day by day to keep soul and body together. It just naturally takes a man with good stuff in him to struggle on forty or fifty years, day by day, to feed and clothe himself and his loved ones, when he never knows what it is to have and enjoy some luxury during that time.

Kind treatment, do as you would wish to be done by, will straighten this old world out quicker than anything I know. It will make friends of capital and labor. It will make friends of politician and voter. Remember—"Do unto others as you would have them do unto you."

L. S. J. (S. C.)

Increasing the Strength of Waste Yarns.

Editor Cotton:

I noticed in Cotton in the June issue the inquiry of "Contributor No. 925," as to how to raise the breaking strength of 2s to 6s yarn, made from 80 per cent floor sweeps and 20 per cent cotton, on a Whitin two-bank condenser card and Whitin wool spinning frame.

As a rule, in cases of this kind, there is one answer to the question, and that is to clean the stock sufficiently before it goes to the cards. An organization of machinery for cleaning the stock he mentions would consist of a willow, card and picker waste machine, a machine with a pin cylinder to open up the stock after it has passed through the card and picker waste machine. The card and picker waste machine has a tendency to curl the stock in process of cleaning, and it is very necessary that it be opened up before it goes to the cards.

I know of one mill recently equipped as follows: Willow, card and picker waste machine, and Fearnought and precarding machine. The stock passes through the ma-

This bobbin was wound of very heavy yarn to show the detail of the wind. The same sort of work is done on single cotton, wool, worsted, etc.

LAZENBY FILLING WINDERS accomplish the results which make them so valuable to so many mills.

The yarn is wound from beginning to end under even tension, and the cross-wind lays the yarn so that it can not possibly sluff off. Any tendency of the yarn to wrap around the bobbin barrel and draw selvedges is eliminated, because the yarn throws *from* the bobbin.

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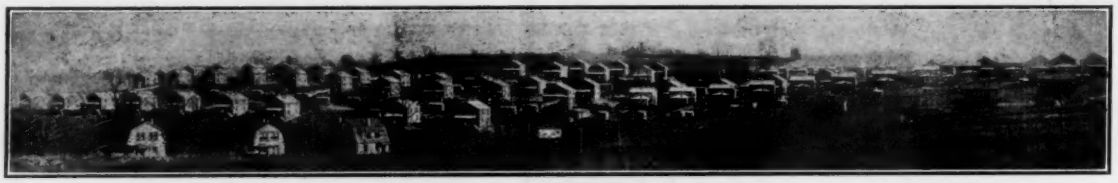

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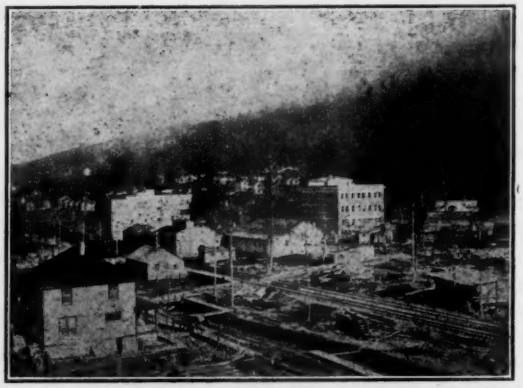

PUBLIC AND COMMUNITY BUILDINGS

chines in the order given. In this case, using 100 per cent floor sweeps, we had a strength constant of 1,000.

Ordinarily, however, it is very hard to get mills to consent to buy cleaning equipment necessary to clean the stock properly. H. F. D. (MASS.)

EDITOR COTTON:

In connection with the question of "Contributor No. 925," I would say that the experience I have had in running short staple cotton on Whitin full roller cards and Pease frames or wool spinning frames to make coarse yarns, is as follows::

Mix the cotton thoroughly by taking bunches of the floor sweeps and bunches of the short staple cotton and running them through the willow twice. This works the material fairly well open.

Spread out on the floor and sprinke with emulsioned water. (Use about ½ pound of emulsion to a water-pail full of warm water, and dissolve.) Stir up the mixture of cotton and let dry a few hours if possible, because it will clog the feed rolls and licker-in if it is too wet.

Place in automatic feed hopper, and if the cards are kept in good condition, and clean, I don't see why a good strong yarn could not be secured.

A little olive oil rubbed into the rub aprons on the condenser will be found very beneficial; and keeping the humidity a little higher than usual, seeing that the fancy rolls are performing properly and keeping the cards and frames clean, all will play an important part in the production of good yarn of this grade.

If "Contributor No. 925" would let me know more of his equipment and processes, maybe I could help a little more. H. D. (MASS.)

EDITOR COTTON:

The question of "Contributor No. 925" with reference to increasing the breaking strength of waste yarn is somewhat difficult to answer. The usual recommendations as to having a thorough mixing and cleaning of the cotton are of course essential.

This correspondent states he is using 80 per cent floor sweeps and 20 per cent short local cotton. If these floor sweeps are card sweeps, and oily, I don't believe he would have much need for an emulsion. As a matter of fact, if he has not done so, I suggest that if he is using an emulsion, that he run some stock through without any emulsion just to see what the result is.

In case he does need an emulsion, I can recommend Wattles compound, which is 96 per cent vegetable fat. One pound of this softener should be used to one gallon of water, having water hot and stirring in the softener. This should then be strained through several layers of burlap. I recommend up to, but not over, 16 per cent of this emulsion to the weight of the stock, or about two gallons to 100 pounds. Also care should be taken that it does not stand too long, otherwise there is a tendency toward mildew.

It may be that this man is using too much emulsion, and that he is trying to run his stock through when it is damp. This, of course, would cause him difficulty.

R. R. (GA.)

The readers of this department can help you solve that mill problem.

The Preparation and Weaving of Artificial Silk.

EDITOR COTTON:

During the last few years, especially since the war, there has been a demand for more variety in dress goods. Fashions have changed, and more often than in former years. Manufacturers have been doing their utmost to place new designs and qualities to please the public eye and taste. Rayon or artificial silk has filled the gap and seems to have come to stay as a decorative fiber or filament. It renews some of the old time patterns in shirtings and dress goods or in newer styles semi or wholly made from the fiber. The silk is more suitable than in former years for manufacture, and its use is bringing up problems in the mills one does not have to contend with in weaving cotton or pure silk, and it behooves everyone interested to seek the means most suitable and economical for weaving it into cloth.

This yarn or fiber is devoid entirely of elasticity. It can be stretched to a considerable extent, but does not regain or contract as does cotton, thereby losing its strength and thickness as to counts.

Viscose silk must not, on any account, be placed in a damp atmosphere, the thread having a tendency to become weak under these conditions. In the working of this yarn, if in a damp or moist room, it is apt to become stretched, and consequently does not give the effect aimed at in the cloth apart from the actual tendering of the warp due to stretch and causing uneven places in the fabric. Rayon warp can be purchased in hank, warp, chain, ball warp or cheese. Filling is on the tubes or whatever form suits the manufacturer interested.

When the yarn is supplied in the hank, it will be wound onto bobbins by a machine similar to the one used in winding real silk. There need not be any under tension or friction on account of the contraction of the yarn. It passes through a porcelain guide, this being the only hard substance it comes in contact with in its passage from hank to bobbin. The machine runs comparatively slow and the drive is by friction. Any obstructions in the yarn, the threads hold the bobbin, so that all breakages are reduced to a minimum. The same machine can be used in winding filling from hanks to bobbins before winding onto tubes.

It is necessary in preparing for the weaving to study the best method of placing the yarn on the weaver's beam without damaging or stretching the yarn. One of the best systems is the horizontal warping machine. The V creel should be built so that there is no friction on the yarn by the thread rubbing on the sides of the bobbin. All bobbins should be of one weight and all wound to one size. The steps for creel pegs should be of glass and kept in perfect condition, the same applies to the pegs. The strain should be equal each side and all yarn must come direct to the machine. The warper must look out for dropping ends which means unequal tension, and should take steps to remedy this immediately, or it will mean trouble in the loom. There must be little handling of the yarn at this process or it will mean broken filaments, especially if the yarn has not been sized beforehand.

By means of this machine the warp can be built up in sections laid side by side as the creel is generally mounted on rails, and when the requisite number of ends are completed the warp can then be run off the machine onto a back

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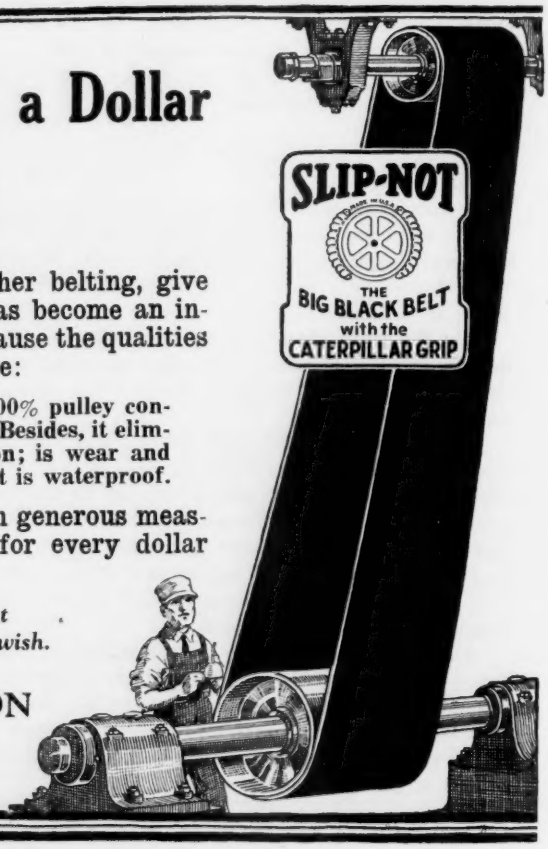

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beam, or weaver's beam, as required. It is then ready for the sizing process or looms. The flange on the beams should be set dead true, and especially the spikes or gudgeons.

In the operation of beaming all kinds of faulty yarn can be removed by the operator when dressing the warp. About 18 to 24 ends per inch is a good number to run to enable the size to do its work in the box.

To enable art silk warp to withstand friction a slight sizing only is necessary, such as flour, sago, or such sizing materials as are used for silk. Weighting materials must not be used, as the fiber is different than cotton and will not absorb. Any size only goes on as a coating, which is all that is necessary to protect the filament from friction during weaving. It is a common practice to dye and size the yarn in hank form, which is then wound and warped as before mentioned. If yarn is only dyed before warping and the sizing is left until the beaming process, care should be taken to see that all colors are fast. There is a machine on the market which sizes and beams the warp at the same time in a straight sheet. For warps say containing 2,000 ends, a rebeaming machine is necessary, somewhat similar to a dressing machine headstock, which winds on direct from the back beams which are set in a creel as in a rebeaming machine for cotton. Care must be taken that no strain is placed on the warps, especially during the sizing process, which must be just lukewarm.

We now come to the winding of the filling. Before proceeding with this operation all the yarn should be thoroughly dry, if this cannot be dried in an oven at a low or moderate temperature, then I should advise keeping all yarn in a dry place slightly heated. Care must be taken in drying. If overdone, it tends to make the yarn brittle, and consequently, bad for weaving. Drying the filling has its good points. It does much to prevent stretch, and any stretched yarn does not show up until after it is woven in the cloth in the form of bright picks and thin places. In winding from the hank the silk should not be shaken to open it out as in cotton hank winding. It is the best method to open it out by hand and place on the reel or swift immediately in a straight condition.

The winding should be strictly supervised and the weighting arrangement for each swift carefully adjusted so that each bobbin is wound with equal tension.

All yarn should be firm on the bobbin, as the nature of the fiber makes it have a tendency to slip and move if slack bobbins are made. Sufficient length should be taken from the bobbin and swift when piecing up to eliminate stretch and all knots cut off close by means of scissors or any of the hand knotters now in use.

In starting the bobbin, care should be taken to start up slowly to prevent any sudden jerk.

The stationary cup winder is unsuitable for winding artificial silk, as it requires a sensitive builder motion. The best system is to wind from hanks onto warper bobbins and then onto pirns or tubes to prevent excessive strain, and all knots should be laid on the largest diameter of the bobbin and not on the traverse, so that during the unwinding from the pirn the yarn will not be obstructed by the knots. Consequently, less strained places and bright picks. All pirns should be kept separate, viz., those with knots and those without. Winders should be taught to do this, so that all the knotted yarn can be used up in any cloths where thin or bright places will not show up, such as checks or

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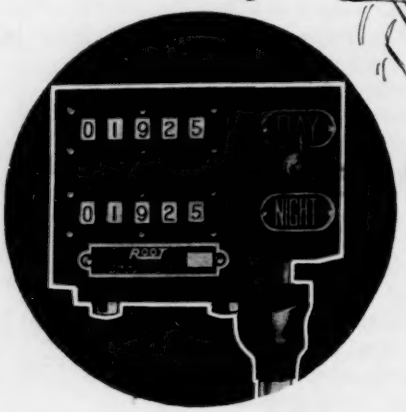

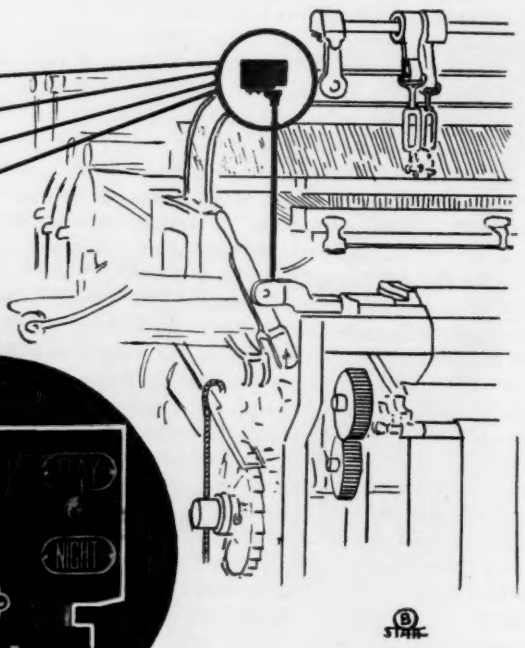

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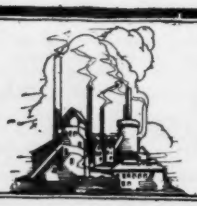

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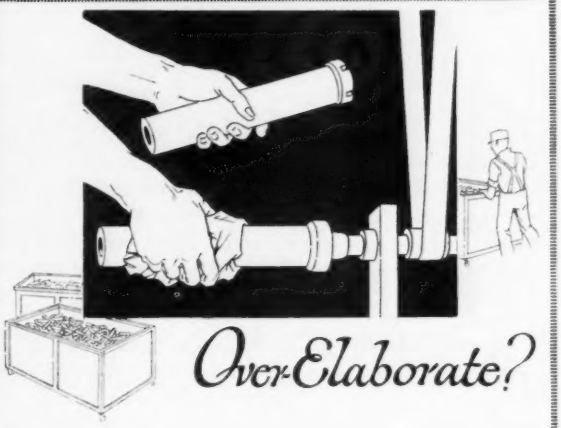
fancies, where cotton and silk are used in the checking. There is an excellent machine on the market for winding art silk. It is called the rapid winding machine and is also suitable for winding any class of yarn apart from art silk.

The yarn can be wound onto pirns or paper tubes with a conical base or in the shape of a pin cop. It is built up by a cup in a ball bearing, the cup being made of fiber, and any damage is eliminated by that method of mounting the cup, as on the slightest touch it revolves.

Any size of cup can be used to suit different pirns, and can be changed in a few moments by means of thumb pressure. There is also a hard nosing arrangement to prevent slipping during weaving. The traverse is generally seven coils up and seven coils down. A slow starting motion, a broken thread device, full pirn motion and an automatic tension motion are special features of this machine. There are several makes at present on the market.

Ordinary methods of weaving filling likely to balloon or fly off be inserting a brush are not suitable for artificial silk. Anything of this kind in the shuttle is likely to damage the filament. Any method that will prevent flying off and ballooning while unwinding, and not damage the thread, is suitable. One good method is to place a piece of velvet or plush fastened by glue in the shuttle. This is placed so that the tube or pirn lies full length against the velvet. All pirns should fit the shuttle perfectly, that is, as near to the eyes as possible. The pickers should be smooth and the picking motion not too heavy or jerky. All the boxes should be lined with a soft smooth cotton cloth to prevent cutting and marking of the filling. Selvages should be nicely adjusted and not too tight. Shuttles should be well checked. The filling should be kept down from the spindle as much as possible. Owing to the tendency to balloon it is likely to cause dirty marks from oil, etc. Single yarns in art silk give the most luster, but they must be sized. Twofold yarns will often weave without sizing. The cover effects are not so good, however, and it is advisable to use soft twisted single yarns to get the finest effects. Also, the finish is far better on single yarn than on twofold, owing to the yarn swelling under the action of the liquids in that process and giving a better fullness to the silk effects.

A metal or glass eye in the healds is the most suitable medium for reducing friction. It is preferable to use healds knitted to pattern or plan, as this also reduces friction to a minimum. All healds should be smooth and well varnished and not too hard sprung. All weavers' beams should be set no wider than the yarn stands in the healds. Any means suitable should be adopted to reduce friction, as this causes broken filaments or threads, also beads or runners behind the reed. Where silk is combined with other material, and the denting is fine, it is the best method to have the reed made to pattern or reduced in counts so that more threads per dent are inserted to prevent friction. It is better to dent silk two, three or four ends per dent than one in a dent. All strain in shedding should be avoided as far as possible, and no friction of the warp along the race board should be allowed. All cloths should be woven face side up. Shedding should be timed so that friction is reduced to a minimum by beating up with the shed crossing later. Control the silk warp by means of the dobby if the ground is plain and cotton, which can be worked by the tappets underneath the loom which would be timed earlier.



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Merely the first coat makes the bobbin seem smooth as glass and high in polish. According to usual standards, further shellacking might be thought over-elaborate.

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Jordan Precision Bobbins

All tension should be taken off warps during stoppage over week-end or holidays. This saves trouble in starting and also makes better cloth and eliminates the thin places owing to strain. Owing to the sized yarn the effect looks very thin, but, as before mentioned, the cloth looks better after dyeing and freshening when the size has washed off and the fiber swelled out filling in the cracks.

The race board should be covered with swansdown. This makes a smooth passage for the shuttle and yarn and tends to preserve the good effects of the fiber. All silk should be placed on a separate beam from the cotton, as it requires different tension than cotton. It must be wound hard on the beam.

Shuttles are now made lined with lambs skin, which gives a good uniform tension on the yarn. The bottom of the shuttles are filled within 1½ inches from the bottom of the peg to prevent ballooning below, and the top is also a tunnel. Pegs are made to suit individual pirns or tubes. Cotton or fur tensioning devices can also be inserted. One firm making these special artificial silk shuttles, Wilson Brothers of Garston, Liverpool, England, use a button tension device. The filling passes between the two buttons and the drag is obtained by the pressure exerted by the coiled springs on either side of the buttons.

This prevents ballooning and marking of the filling and is a satisfactory tension.

All temple rollers should have as short a pin as possible and wrapped with suitable material to prevent catching in the silk filament, as this is easily displaced. There are several patent temples suitable for this fabric, such as the rubber nip temple just sufficient to keep the cloth to its width without disturbing the yarn or distorting the thread.

All take-up rollers should be inspected to see that there are no rough places. Looms should be thoroughly cleaned, and all breast boards should have a good depth to prevent rubbing of the operative's clothes, and preventing dirty marks, which are hard to remove. A good plan is to place a piece of cloth or wrapping paper from the fell of the cloth to the cloth roller, teaching one's weavers to be clean in handling the fabric and to watch how it works in the looms, and they will soon overcome its difficulties.

C. W. (CANADA)

Licker-in Grinders and Speeds.

EDITOR COTTON:

Please let me offer my whole-hearted sympathy to "C. C. (N. J.)" who, in his letter in the May issue of COTTON, says that the licker-in grinder is a plaything. I, for one, can tell him that it is one of the best playthings that he or anyone else ever played with when it comes to having a dull licker-in. He says his best advice is to lay off the practice of licker-in grinding. That's all right, he can if he wants to, but I, for one, will use one as long as I am in the mill business.

When the nose of the teeth is ground off, as he tells about, then I will send the licker-in to the shop to be recovered. And if a man knows how to grind a licker-in he will be able to grind it quite a few times before that happens. Furthermore, the shape of the teeth does not change in the least bit, as the grinder is made for that purpose. If a licker-in grinder is a plaything, then a card grinder must be a plaything, too, as it is just as important to have a good sharp licker-in as it is to have good sharp card clothing. Of course, if a licker-in is ground every day it will wear the darn thing out in no time, but it isn't necessary to grind it unless it needs it. The way "C. C." talks, everybody grinds it every time the card is ground. How about the card? Doesn't a time come when the teeth get ground down below the bend? In such a case we all know that new clothing is necessary. That's a plaything, too.

It may be that "C. C." believes in running the licker-in until it is done for, and then sending it to the shop to be recovered, which would cost about a hundred dollars. That's about the way some men look at things. The way he talks I don't think he ever used a licker-in grinder.

"C. C." says that after "U. J." gets through reading all the different licker-in speeds recommended in recent issues of COTTON by various mill men in response to his question, he won't know whether he's standing on his head or his heels. That's entirely up to him. He is not obliged to do what any of them say. He is supposed to use his own judgment about the matter. As I said before, I run mine 350 r.p.m., and when my lickers-in need grinding, I put them on the grinder—not all day—and I am having good results. "C. C." or anyone else can do as he pleases; that's his own business.

Any mill man knows that the slower the cards are run the better the carding produced, and that applies to the licker-in as well. That was my idea in slowing them down, to keep them in better condition, and to avoid grinding as much as possible.

Another thing—how about a dull licker-in breaking the ends of the fibers, tearing the life out of the stock, not burning it out, as "C. C." tells us about. I have worked where there was no licker-in grinder, and every time a licker-in became dull, it was quite a plaything to send to the shop, and have a card stopped about four or five weeks waiting for its return. I call that something to play with, and some institution.

"C. C." says, how about trying those tactics on fine goods? Well, I don't know how fine a mill he is in, but I will gamble that he is working in just as near a burlap mill as I am. We consider a mill up here that spins numbers around 100s a fine mill. Wouldn't those numbers make rather nice burlap? I have my room all set to my own way of carding, using speeds that I think best, and I have had no comeback as yet, and even though I sometimes re-grind my lickers-in, and run them at 350 r.p.m., I am not troubled with sending many to the shop, only when they become short and I cannot get the proper setting. A good licker-in will last a long time if the teeth are not made of lead. After a licker-in has been run a short time it pays to look it over, as they may be made of poor stock that will not hold an edge.

However, if we all agreed on everything then there would be no discussion in COTTON. We should read the different men's ideas and use our own judgment. We don't all think alike; that's a sure thing. One man might try a thing and get good results where another man could not. But my advice is to have a good licker-in grinder and learn to use it properly, as it will pay for itself in a short time.

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*Models B-6 and B-7

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What Causes the Sinker Streaks?

Editor Cotton:

On a Scott & Williams K machine, we are making a 200-needle stocking, using 50s/2 yarn. This should be made about 18½ ounces to the dozen coming off of the knitting machine, and about 18 ounces finished. Ours come a little heavier, however, and when we try to cut down on it, we have trouble with sinker streaks. We use the Scott & Williams No. 231 long sinker and the No. 233 short sinker.

If any of your readers can offer any suggestions for eliminating these sinker streaks, I shall appreciate it.

K. R. (N. C.)

Using and Adjusting a Model R I Machine.

Editor Cotton:

The purpose of this article is to discuss a large number of common difficulties encountered in the operation of the Model RI Scott & Williams knitting machine, listing these one by one and taking them up to point out the causes for the trouble and the remedy therefor. The occasional reference numbers used are from the Parts Catalog of the R I machine and will be readily understood by the mill man.

The problems discussed are those which have been encountered and solved over a rather extended experience in the operation of a mill using this type of machine. It is hoped that the discussion will prove of value to others, in the way of presenting one man's experience with this machine. Any comment that any reader has to make, either in the form of further questioning, or in the form of outlining other methods for accomplishing the desired result in any instance, will be welcomed through "Knitting Kinks."

Tuck Stitch Trouble.

Taking up first the problem of tuck stitch trouble, as this is one of the most frequently encountered difficulties on an R I machine. An R I machine is somewhat similar to a ribber. A ribber has iron weights which pull the loops off of the dial needles after the stitch is cast off, while an R I machine depends entirely upon the saw-tooth sinkers, which are directly underneath the dial needle, to pull over the loops. This is the reason why more trouble from this difficulty is had on an R I machine than on a ribber.

If there is a string of tucks, or one or two all in the same line, this is due to either the hook or cast-off of the dial needle being defective. If changing the dial needle does not stop the trouble, the saw-tooth sinker directly under the dial needle that is giving the trouble should be changed. The points of the sinker, if they become dull, do not get a good grip on the fabric, resulting in the loop not being pulled over. This happens quite frequently.

It should be kept in mind always that an R I machine knits backwards as compared with a Model K machine, so when changing a dial needle, cylinder needle or sinker, these must be taken out on just the opposite side of the machine to what would be the case with a Model K, due to the fact that the stocking comes off backwards.

There are three kinds of sinkers in an R I machine—low butt, medium butt, and high butt. The high butt sinkers go over the long butt needles; the medium butt sinkers go over the short butt needles; the low butt sinkers go between every other high and medium butt sinkers in the machine. When changing a sinker in a machine, oftentimes an error is made and the wrong kind put in for the one being taken out, and a tuck stitch will result the full length of the stocking. This happens quite frequently.

If the dial lays too close to the cylinder there is not enough space for the fabric to work down, resulting in tuck stitches in various parts of the stocking. If the dial is too high from the top of the cylinder the saw-tooth sinkers do not get a good grip on the fabric, resulting in tuck stitches or pile-ups. As a remedy: Put a screw-driver under the cylinder tube when the dial needles are out, and work the cylinder up and down. There should be at least 1/16-inch play between the top of the cylinder and the bottom of the needle dial in order to get the best results. Not having the proper amount of play here is generally the cause of tuck stitches in the front of the foot, and just below the ankle of the stocking.

Tuck stitches occuring most anywhere on the long butt needle side in the foot of the stocking are frequently caused by the central sinker with drawing cam No. 9468. The function of this cam is to draw the butts of the saw-tooth sinkers back out of the way at the knitting. After the

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

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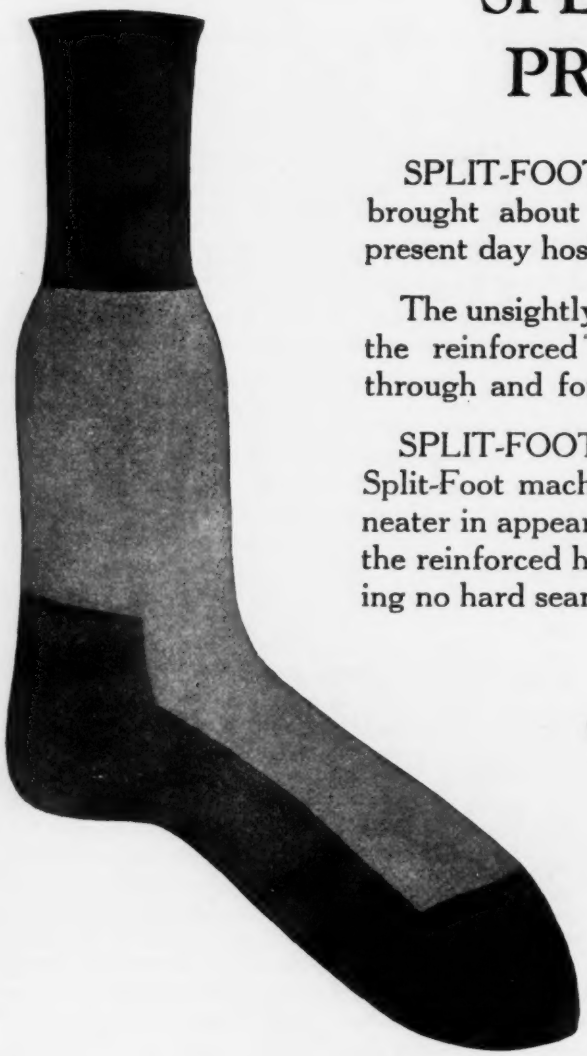

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stitch on the dial needle has been formed, the saw-tooth sinker comes in with a bound, gripping the fabric and casting off the loop. When on the foot of the stocking, this cam is only half way down, drawing back the high butt sinkers only, due to the fact that the ribbed effect is made only on the front part of the foot. The adjustment of this cam is secured on the rod finger No. 9492 directly above this cam. When on the foot of the stocking there should not be more than 1/64-inch play between the bottom of the central sinker cam and the tops of the medium butt sinkers. If there is more play than this, the butt of a high butt sinker, if it happens to be bent or worn, does not engage in the slot of the sinker cam, leaving it in use, to result in tuck stitches. After the foot is made, changing into the ankle of the stocking, the central sinker cam goes in the rest of the way, drawing out the rest of the medium sinkers.

One of the difficulties met with in an R I machine is that it gets stuffed with lint quickly, preventing the sinkers from moving freely. If the saw-tooth sinkers, especially, do not get a full throw the dial stitch will not be cast off entirely, resulting in tuck stitches in various parts of the stocking. The lint should be cleared out, particularly on the inside of the inside sinker ring.

All sinkers, of course, must work freely. If the sinker slot is bent the sinker works hard, resulting in its not getting a full throw on the dial needles. The slots should be straightened.

Next let us consider the centering of the dial. The needle dial has two kinds of slots underneath the dial, a narrow and a wide slot. The saw-tooth sinkers engage in the wide slot and the short butt sinkers in the narrow slot. If the saw-tooth sinker is not entirely in the center of the wide slot in the dial, the sinker does not get an even pull on the fabric as the dial stitch is being cast off, resulting in tuck stitches. This dial is set back or ahead as the case may require, as on a Model K machine.

The dial needle not being drawn back far enough in the dial to cast off the stitch completely will result in tuck stitches. The stitch is adjusted by the dial and can be set by moving the cast-off rib knit cam No. 9526 backward or forward as the case may require.

Tuck stitches are often caused by the cast-off dial needles casting off their stitch before the hook needles are drawn in. The dial plate is adjustable to overcome this difficulty. By loosening the transfer cap link plate No. 9789 the plate can be moved forward or backward.

It generally happens that the central sinker cam with drawing bracket No. 9469 does not draw the saw-tooth sinkers back far enough or quick enough to allow them to bound in soon enough to cast off the dial stitch after it has been formed. This central sinker cam bracket is adjusted by loosening the two screws that hold the bracket; it can be moved backwards or sidewise, as desired. Care must be taken, however, to see that it is not moved back too far, as the butts of the sinkers will not have room to pass in the sinker ring.

One of the most frequent causes of tuck stitches is damp yarn. The damp yarn prevents the dial stitch, as it is being cast off, from casting off completely, due to the fact that the loop clings to the hook of the needle instead of rolling off. On the other hand, when the yarn is dry the stitch rolls off the hook of the needle without any diffi-

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culty. A ribber machine does not have this trouble, due to damp yarn, for the reason that it has iron weights which pull the loop over.

This trouble is generally noticeable the first thing in the morning after the yarn has stood overnight and the machine is cold. The stitches do not roll off as easily as when the yarn has run off a little and the machine has warmed up. But if there is the proper relation between the cylinder and the dial, less trouble will result from damp yarn. The proper spacing between the cylinder and dial is explained in a preceding paragraph discussing this point.

The transfer dial spindle must move freely. As the machine is transferring on and off the heel and toe, the dial plate is raised and lowered, so if the transfer dial spindle does not drop completely, after each change, the dial will not be in the proper relation to the cylinder, and tuck stitches will result in various parts of the stocking. This is generally due to the spindle not getting the proper amount of oil. If oiling does not remedy the condition, the spindle must be taken out to see what is causing it to bind. The spring tension on top of the shaft may not be stiff enough.

Drop Stitches on the Instep.

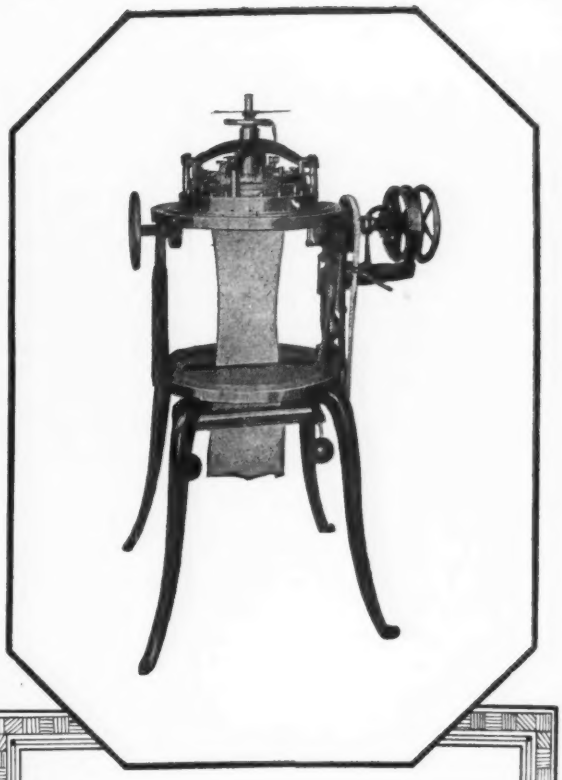
Just before transferring onto the heel, the loops are on the high butt dial needles. The machine then changes into the heel, raising the dial, at the same time, ¼ inch. Due to the fact of the back and forth motion while on the heel, which stretches the loops on the dial needles, and the drop of the dial, the loops on the hooks of the dial needles have a tendency to roll off of the hook of the needle, causing drop stitches. Following are some suggestions as to what might be causing this: The key in the spindle might be worn, which would cause too much play in the dial and result in drop stitches; if this is the case the key should be changed. There may be too much play between the spindle bevel pinion No. 6911 and the small horizontal bevel pinion No. 6912; a washer should be put under the spindle bevel pinion No. 6911 and the cross bar No. 5222 if this is the trouble. The dial needle being bad or not having the proper amount of friction could cause this trouble. Lowering the dial slightly will sometimes remedy this difficulty.

Yarn Clamp.

It is of absolute importance to keep the yarn clamp flat on the dial plate to prevent the yarn from pulling out too freely and puckering up. The dial needles are out all the time so that when the machine makes a yarn change, and if the yarn does not catch on the needles at the proper time, a pile-up results, because there is no fabric at that place for the saw-tooth sinkers to grip.

Sizing Work.

An R I machine keeps its size fairly well and needs little adjusting. All the threads on the machine have yarn tensions, and if the stocking is running long or short it is recommended to adjust the tensions rather than change the cylinder adjustment of the machine. The cylinder adjustment should not be made unless the adjustment cannot be secured with the yarn tensions. The reason for this is because every time the cylinder adjustment is raised or lowered it throws it out of relation with the dial of the machine, resulting in tuck stitches or pile-ups. If the cylinder is raised or lowered the dial has to be set accordingly,



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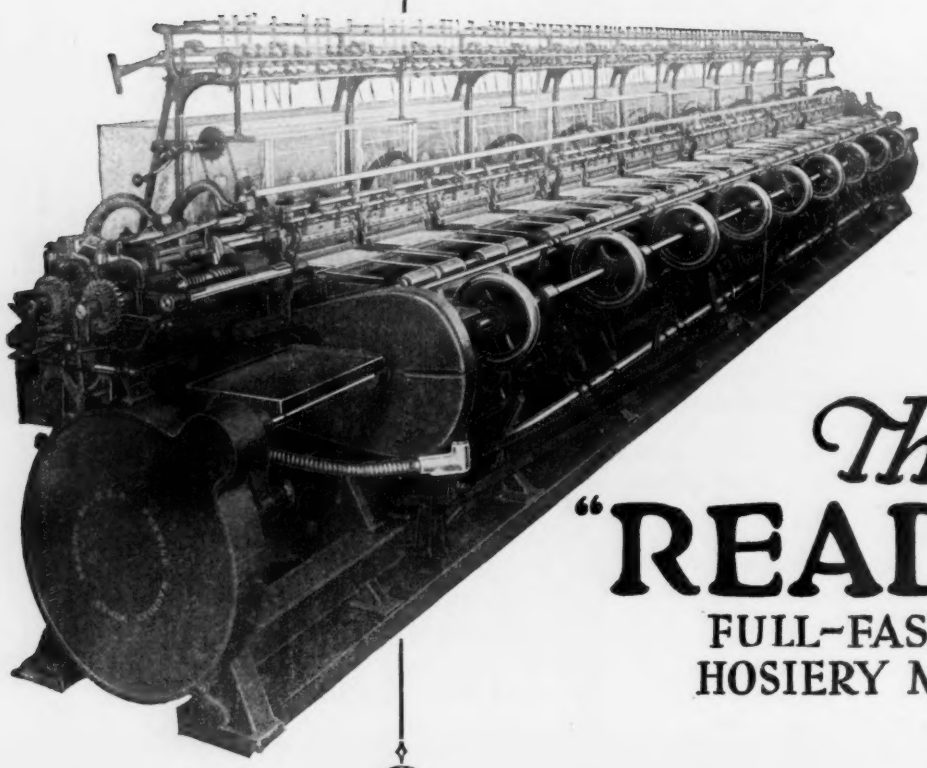

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unless the dial will stand the adjustment that was made. Every time the dial is raised or lowered the rib knitting cam lever No. 5245 must be adjusted in relation to the butts of the dial needles. A stocking running long or short is frequently caused by yarn being out of the yarn tension or caught somewhere.

The Dial Needles.

It is important for best results to have the dial needles set properly in the dial. As the dial needles come from the factory the bottom of the hook on the cast off binds on the top of the hook of the hook needle. There has to be a hair's space between the bottom of the cast-off and the top of the hook of the hook needle. This is necessary, because as the cast-off is casting the loop off the dial needle, and there is no space between these points, the loop will get caught back on the point of the hook needle resulting in a tuck stitch.

The remedy is to bend the hook of the hook needle down slightly to get the proper clearance. Care must be taken when bending the hook not to nick the needle with the pliers, and also not to get it bent too far down, as this is just as bad as not bending it at all. The cast-off should never be bent, as it has the proper bend when it comes from the factory. The tail end of the cast-off must be bent slightly to get the proper tension on the needle.

The Cylinder Needles.

The hooks of the cylinder needles must be in a perfect line on a Model R I machine. The throat plate lays much closer to the needles than it does on a Model K machine, so if the needle is bent forward slightly it will come in contact with the throat plate, breaking it off. Very little trouble is had with the cylinder needles, due to the fact that they are 36 gauge, much coarser than the Model K machine. Once in a while a rivet will start working out, causing cut-outs in various parts of the stocking. The right amount of friction should be kept on the needles.

Play in Rib Knitting Cam Lever.

Every time the dial is raised or lowered, the rib knitting cam lever No. 5245 must be set accordingly in relation to the butts of the dial needles. When the machine transfers off of the toe into the foot, also just after transferring off of the heel, the rib knitting cam lever comes down half way, drawing out the butts of the high butt dial needles, throwing them into action, but leaves the short butt dial needles in out of action until the machine transfers into the ankle of the stocking. Then the lever comes down the rest of the way, throwing the short butt needles into action also. When on the foot of the stocking, there should be at least 1/32-inch of play between the bottom of the dial cam and the tops of the short butt dial needles. No more, no less. When the dial is raised, the butts of the short butt dial needles are just so much closer to the bottom of the dial cam, which will result in some of the short butt needles being thrown into action, unless a corresponding adjustment is made on the eccentric of the rib knitting cam lever.

If the dial is lowered it means that the bottom of the dial cam is so much further away from the butt of the short butt dial needles, which may result in some of the butts of the high butt dial needles being broken, or not throwing all the short butt needles into action when changing into the ankle of the stocking, unless corresponding adjustment is made on the eccentric of the rib knitting cam lever. This may also result in the cam lever not drawing the dial cam down far enough to keep all the dial needles in action, as the machine transfers into the leg of the stocking, resulting in a very bad pile-up.

Importance of Setting Dial.

The dial on an R I machine is set the same as the dial on a K machine, but what happens on an R I machine when the dial is set off one tooth either way is this: Underneath the jack dial is a narrow and a wide slot. The dial needles are directly above the wide slot, and when the dial is set right, the saw-tooth sinker engages in this wide slot. As the stocking is being knit, this saw-tooth sinker has a direct pull on the dial needle as the loop is being cast off the needle. When the dial is set one tooth too far forward or back, the dial needle is not under the saw-tooth sinker. Also the saw-tooth sinker is then engaged in the narrow slot under the dial, which results in the sinker not having a direct pull on the fabric as the loops are being cast off, resulting in a very bad pile-up.

Fastening the Dial.

When taking off the needle dial and putting it back on, care must be taken to be sure it is set up as far as it will go, and also to tighten up the set screw with as much energy as possible. The reason for this is that there is a lot of strain on the dial, due to the fact that the dial needles are always in action. If the dial gets loose and slips down slightly, there is not enough room for the fabric to work down, and the result is a pile-up.

Pile-Ups.

Under this heading will be discussed the various causes of pile-ups.

Bad dial and cylinder needles, especially the dial needles, break quite frequently in an R I machine. Every time a needle breaks the machine starts to pile up, due to the narrow passage between the cylinder and dial. When a dial needle breaks, the cylinder needle should also be examined, and vice versa, because a pile-up generally breaks both at the place of the pile-up. If all the bad needles are not taken out, another pile-up will result when the machine is started.

A broken sinker will cause a pile-up.

The purpose of the needle protector is to stop the machine at once the moment a needle breaks or the machine piles up. Naturally, if the point of this protector does not project in far enough, the machine will not stop when the pile-up occurs. This protector is adjusted on the needle protector post No. 10127 and can be moved in or out as wanted. This should be set so that the point of the protector just clears the hooks of both the cylinder and dial needles. Sometimes the short trip rod collar No. 6924 gets out of adjustment, resulting in the machine not stopping quickly enough. This collar is set so that there is 1/16-inch play between the collar and the needle protector trip bracket No. 5241.

If the high speed stop screw has fallen out of the pulley, the machine will not stop when it starts to pile up.

When the machine transfers off of the toe and heel, the dial drops to its proper height in relation to the cylinder. If the dial shaft binds or sticks in any way the dial will not drop low enough, leaving too much play between the bottom of the dial and the top of the cylinder, resulting in a pile-up. This might be caused by the shaft not getting oil or the spring tension on the top of the shaft may not be strong enough.

The part that play between the cylinder and dial has is discussed fully in a preceding paragraph, with reference to tuck stitch trouble.

The purpose of the four graduating links is to get the fashioning effect in the ankle of the stocking. At each kick of the four graduating links, the cylinder raises slightly, so does the dial, and so does the rib knitting cam lever No. 5245. All three of these changes are made at the same time. It is plain to see that if the cylinder raises higher than the dial, or vice versa, or the rib knitting cam lever raises higher in relation to the height that the dial is raised, there will not be the proper clearance between the bottom of the dial and the top of the cylinder; if the rib knitting cam lever raises higher than the needle dial, then the dial stitch cam will not be in far enough to bring all the dial needles into action, resulting in the loops not being cast off, causing a pile-up. This is one of the most sensitive adjustments on an R I machine, and must be understood.

One of the worst things that can be done on an R I machine is to set the chain wrong. This gets the whole machine out of time, resulting in a pile-up. Naturally, the chain should be set right.

Wrong setting of the dial, and its relation to pile-ups, is explained clearly in a preceding paragraph headed "Importance of Setting Dial."

The fact that the dial needles are out all the time, and as the machine is going through a yarn change, if the thread does not get into the hooks of the needles in time, a cut-out will occur. This results in there not being any fabric at this point for the saw-tooth sinker to grip, the fabric not working down, and a pile-up. This happens quite frequently at the yarn change in the top of the leg. To remedy this, care should be taken that the yarn clamp lies flat on the dial plate, so that the thread will not be puckered up when going through a yarn change. There might be lint on the bottom of the throat plate which could prevent the finger from dropping completely. The finger spring may not be stiff enough.

Puckered Streaks.

This trouble is generally caused by the butt of a sinker being broken off. The machine being stuffed with lint will cause this trouble.

Another trouble which should be mentioned is the thread being caught in the hooks of the dial needles on the short butt needle side in the foot. This is generally due to there not being the proper clearance between the bottom of the stitch dial cam and the tops of the short butt needles. The proper clearance is explained in a preceding paragraph headed "Play in Rib Knitting Cam Lever."

The importance of raising the dial is explained clearly in the paragraph headed "Play in Rib Knitting Cam Lever."

Outside Sinker Ring.

When the outside sinker ring is changed, there is no certain way it must go on, due to the fact that it has no splicing cams. The only thing necessary is to line up the slots so that the sinkers go freely.

Taking All Sinkers Out of Machine.

When taking all the sinkers out of the machine, consideration must be given to the way they should go back, due to the fact that there are three kinds of sinkers. The proper way to tell which slots they go in is to set the dial the way it would be if the machine was started. Then raise the first long butt cylinder needle, to the right of this needle should be a wide slot which is underneath the dial. The idea is to have the saw-tooth sinkers engage in the wide slots, and the short butt needles in the narrow slots. If these sinkers are put in the opposite way, a bad pile-up will result, and all sinkers will have to be moved and set over.

Cut Outs in Heel and Toe.

The fingers in an R I machine have porcelain eyes. The constant changing and pounding on the throat plate in time will have a tendency to crack the procelain. This, of course, prevents an even pull of the take-up when on the heel and toe. The porcelain should be changed, if it is cracked, care being taken that there is the proper clearance between the bottom of the finger and the throat plate to prevent the thread from binding. Any other cut-outs in the heel and toe would be caused by the same things as on a Model K machine.

RYMI.

Causes for Needle Butt Breakage.

EDITOR COTTON:

In reply to the question of "Contributor No. 722" in the March issue of COTTON, with reference to Model K Scott & Williams machines breaking needle butts, I believe I can help him. I have not fixed machines for five years, but I have been a fixer during my life-time.

There is no necessity for having an excessive number of broken needle butts. I offer the following suggestions:

If the picks are properly adjusted, when the machine is on the heel or toe, turn the machine slowly by hand and watch the pick pick up the needle. When the pick turns the needle loose, still turn slowly and see if the pick raised the needle high enough to pass over the point of the small cam attached to the back of the cam box. I don't remember the name of the cam, but there is an adjusting screw for each pick that raises the needle. The picks can be raised or lowered in any way desired.

If the picks are properly adjusted and the trouble persists, examine the point of the pick, there might be a flaw in it.

After all this is done, see that the needles have enough friction on them so they will not drop any after the pick turns them loose. Sometimes a little tallow on the needle butts will help, but I never did believe in fixing machines with oil or tallow. First find the trouble and then fix it.

It could be that the needle butts are too highly tempered, and it would be a good idea to find out just what speed the machine is running. To get good results, I would never run a 220-needle machine over 240 r.p.m.

In closing, let me say a few words in connection with eliminating hole cutting in the heel or toe, and drop-stitches in the gore. Not that I know it all. I have operated ten different kinds of knitting machines, five styles of loopers, three styles of sewing machines, and two ribbers, and still don't pretend to know it all—not by a long shot! But I will say these few words about menders that may be of help.

About 90 per cent of the men think that it is the big things that make the menders and seconds. I would certainly hate to be a cam box in a machine and having someone continually grinding on me—wouldn't you? A lot of

fixers think if the cams are polished and even, that is all there is to do to stop menders. Don't they know that the bumpers have as much to do with stopping menders as the stitch cam? I will admit that the first thing to do is to see that the stitch cams are of the same length; that is, if the menders are not caused by a bad needle or bad yarn or a bad sinker.

But even perfect stitch cams alone will not stop menders. I suggest the following for a machine making menders: First, even up the stitch cams. Examine the sinker cam to see that it is smooth. Then set it in 7/32 inch. Of course this depends on the gauge of the machine and the size of yarn. Next see that the bumpers are properly adjusted so as to throw the sinkers in the same on each side of the gore. If they are not qually divided an even stitch in the heel and toe will not be produced.

When the machine changes on the heel or toe, *stop* the machine and turn slowly by hand until the point of the first sinker going in it is flush with the back of the needle that is up. Then count the sinkers back to the first needle that has almost shed the stitch. If there are three on that side, reverse the machine by hand and adjust the bumpers to draw the sinkers in just the same as was the case on the first one counted. Then go to the take-up, put just enough tension on it to hold the kinks out of the yarn or to prevent it from throwing loops. Of course I can't explain the setting of the bumpers, but I could show you. If a man will do as I have advised he will find his menders reduced at least 50 per cent.

I would like for some reader to try this out and let me know the results. If this seems all right, I may be able to help someone on Model K machines leaving off the stitch when transferring the welt or bursting or breaking stitches in the welt.

M. P. (TENN.)

Knitting Report ..... **Date** .....

Knitter	Size	Dozen	Knitter	Size	Dozen	Looper	Half Hose	Ribbed	Total Dozen
1			33			1			
2			34			2			
3			35			3			
4			36			4			
5			37			5			
6			38			6			
7			39			7			
8			40			8			
9			41			9			
10						10			
						11			

FIG. 1

A Triple Checking Production System.

EDITOR COTTON:

In the operation of a knitting mill, it is vital that closest attention be paid to detail so that even the smallest leakages of profits by the waste route may be stopped. I believe also there should be, if possible, a system for routing the goods through the room in a day, and suitable reports made in order that each morning the office may know just how the proposition stands on any particular lot of work.

Possibly the readers of "Knitting Kinks" would be interested in knowing of the system we have. Figure 1 shows our knitting report, which is made out by the knitting foreman at the end of each day's operations, and immediately sent to the office. In making out this report, the dozens are not counted, but the operator's word is taken for the amount produced. Only one blank is filled out, that is a duplicate is *not* furnished to the inspection department.

An individual report for each inspector is shown at Figure 2. These forms are furnished to the inspectors

INSPECTOR No......

Inspection Report of Hose Knit.....

Knitter	Dozen	Machine Menders	Transfer Menders	Knitter	Dozen	Machine Menders	Transfer Menders	Looper	Doz.	Mend.
1				31				1		
2				32				2		
3				33				3		
4				34				4		
5				35				5		
				36				6		
18				37				7		
19								8		
20				50						
21				HALF HOSE				21		
22				Size				22		
23				9				23		
24				10				24		
				11				25		
								26		

FIG. 2

in blank, and they have no way of knowing the amount of dozens reported by the knitter operators.

The forelady in charge of the inspection department is furnished with the blank shown at Figure 3. This is also a blank report. It corresponds to the individual inspector's reports, except that these individual reports are consolidated by the forelady and sent to the office each day, or immediately upon completing each day's work. The inspection department has no record of the work reported by the operators.

I might say in connection with the form at Figure 4, that we have a section of the knitting room caged off where our tops are kept, and each time a knitter receives a dozen tops she is debited with that amount, and when she returns the knitted dozen of stockings she is credited in the column shown. This form is made up daily by the girl in charge of this top room. A certain number of dozens of tops are issued to each operator at the beginning of work each morning. When the operator needs more tops she must turn in a stocking for each top first issued. At the close of the day all extra tops are turned in with the remaining stockings knit, and the report is immediately sent to the office. This cleans all tops out of the knitting department and prevents waste, etc. Should the operator discover a bad top the foreman in charge of her machines must make the exchange for her.

When all four of these reports reach the office they are balanced and the original report entered in the time-book. You can see what an excellent system this is—we secure a triple check of the work produced. Should the reports not agree, then we are able to locate the trouble immediately.

I should be interested to know what your readers think of this system, and also to see described the forms, etc., used by other mills. CONTRIBUTOR No. 3659.

Met-L-Wood Corporation, 2419 West 14th St., Chicago, has been formed by the R. G. Haskins Company, manufacturers of the Haskins Armord Trucks, to take care of their truck work made necessary by increased facilities, it is announced.

Knitting Machine Fixing.

EDITOR COTTON:

I always did believe in keeping things straight. I know how easy it is to misunderstand a thing sometimes and also how easy it is to unintentionally misquote a statement.

By this I do not mean that either "N. C. S. (Tenn.)" or "Old Knitter (Pa.)" intended to mis-state my meaning, when they commented upon my article on knitting machine fixers, which appeared in the July issue of COTTON. In order to keep the record straight, let me repeat what I said then: "Experienced knitters are, as a rule, the men who are used for the purpose of training for fixers. And almost as a rule this is the source from which come most of our fixers. We often are misled in material for fixers in that we take it for granted that because a man is a good knitter he will make a good fixer. * * * In this argument I am going to maintain that the best knitters do not make good fixers, *if fixers at all.*"

In October COTTON, "N. C. S." quotes me as saying, "that the best knitters do not make good fixers at all." Quite different in words, and very, very far from my original meaning. While "Old Knitter" does not misquote me in his letter in the December issue, he seems inclined to lean a little on the side of "N. C. S."—but on the whole they both seem agreed with my statement that "most fixers come from knitters."

When I said that "the best knitters do not make good fixers, if fixers at all," I mean all that these words imply, and I will try here to explain a little further. The "best knitters," to my mind, are, as I stated in the July issue, "men who have very few if any original ideas; the machine man—the man who keeps pegging away at his work from one machine to another in that regular clock-tick-mechanical way which comes from force of habit, does not stop to figure out the reasons for this or that, or to find a remedy for the trouble that comes when his machine breaks down. He just stops his machine and goes on to the next with the thought that he must watch the more closely these that are left running so that, perchance, he may gain back the loss made by the one standing."

"The best knitters" are men who stay on the job and who for the most part care very little about assuming the responsibilities of fixers. This kind of man is usually contented with a knitter's pay and does not worry about getting higher up. The knitter who makes the fixer is the man who is not satisfied with the knitter's pay, he has higher ambitions, and that is a good indication of his unusual ability to go higher and not be satisfied with just any old thing. I have learned from experience that the man or boy who makes the fixer, while he may be considered a good knitter and has good ideas and can, as "N. C. S." states, sometimes "show the old man something," still as a rule this young man soon discovers that he is talented for higher things and his mind leaves the idea of being a knitter in the dark and launches out into deeper water. And if he does-

CONSOLIDATED INSPECTION REPORT

Date.....

Knitter	Dozen	Machine Menders	Transfer Menders	Knitter	Dozen	Machine Menders	Transfer Menders	Looper	Doz.	Mend.
1				31				1		
2				32				2		
3				33				3		
4				34				4		
5				35				5		
6				36				6		
7				37				7		
8				38				8		
9				39				9		
10				40				10		
								11		

FIG. 3

DAILY TOP ROOM REPORT **DATE**_____

Knitter	Tops to Knitter Dozen	Returned Dozen	Total Dozen Credited	Knitter	Tops to Knitter Dozen	Returned Dozen	Total Dozen Credited
1				31			
2				32			
3				33			
4				34			
5				35			
6				36			
7				37			
8				38			
9				39			
10				40			
				41			
				42			

FIG. 4

n't soon get some showing toward the place for which he aspires he becomes restless and before you know it he is working in some other mill where he has been promised a promotion, or he has turned his attention to an entirely different line of business. As a knitter you could not class him among the best, for his seconds as a rule are higher, his waste is more, and while his ideas so far as theory are concerned are good he does not use the patience that is necessary to make the best and most dependable knitter.

"N. C. S." says that "running knitting machines is a sort of intermittent job—a fellow does not have to run around like a chicken with its head cut off." Now I will agree with him that with some knitters the job is "intermittent," but my "intermittent knitters" work most of the time in the other mill. Some time ago I found one of my knitters "intermitting" just a little too much, and today he is loafing. And another fellow who knows less about "intermitting" and more about *knitting* is on the job.

I don't want a man to go after his machines like a "chicken with its head cut off," but I do want him to stay after his machines, and if he is a knitter worthy of his hire he will soon show his ability to knit or "intermit."

"N. C. S." says that the *word* "fixer," as it is applied in our knitting industry, is a much abused one. I said that the *position* of fixer is much abused. He continues that, "the boy has time to watch the machine and figure out how it operates," adding that he develops into a fixer in this way. Now that is exactly what I meant when I said "he never keeps his mind on the machines that are working well, but rather he is tinkering with the one that is waiting for repairs. * * * This boy is keen to watch things he has noted for some time certain bad places in the fabric, etc.; and he has no doubt had the fixer on the job at different times with no satisfactory results. * * From such boys as this, then, come the real knitting machine fixers."

I have a man in my employ who, for about twenty years, has been knitting. He is one of the best I have ever known. He is not the "intermittent" kind, nor does he imitate the headless chicken, but he keeps after his machines all day long, regularly. I have men who have more knowledge of the knitting machine and of fixing, but they do not come into his class at all when it comes to knitting. About two years ago I needed a man to fix, and thinking as he was such a good knitter and was faithful and dependable I would like to promote him, I asked him if he would like to fix, and he said he would. After having tried for only a few weeks, he came to me and said, "I just can't do it." I put him back on his set of machines, and I hardly think he will ever attempt fixing again. He can locate ordinary troubles, but he has no mechanical ability whatever.

I really have said more than I first intended to say, but I trust I have made the matter clearer. I shall be glad to hear from other readers on this subject.

J. L. H. (N. C.)

This is your department. Use it.

Uneven Tension in Winding.

EDITOR COTTON:

We are making ingrain goods in vertical stripe by reversed plaiting so that the tension of the two yarns is a very important matter. In doing this work we have run into a difficulty that we would like to overcome if possible. When we get the tension of each yarn adjusted on the knitting machine so that the plaiting and reverse plaiting is properly done, we find that when one bobbin becomes empty and we put on another bobbin of the same yarn there frequently is enough difference in the release of the yarn on the succeeding bobbin to upset the adjustment or tension and cause the plaiting to get bad.

If one bobbin of yarn is wound loosely and another bobbin of the same yarn from the same winder is wound tightly, it is always necessary to re-adjust the knitting machine when we change from the loose bobbin to the tight one, or vice versa.

We wind these bobbins on an Oswald Lever skein winder in which the yarn passes through porcelain guides over an oiling trough and through a knot catcher, the drag on the swift being regulated by a weight which hangs over the center of the swift on a leather strap. However, all swifts do not turn with the same amount of friction, and in winding two bobbins of the same yarn side by side we find that one will wind more tightly than the other.

This variable winding tension is reflected in our knitting room where we can have a knitting machine doing perfect work with one bobbin and have to re-adjust it to suit the winding on another bobbin, which to all intents and purposes appears to be exactly the same.

Any information that you may be able to secure for us through the medium of "Knitting Kinks" along the line of uniform tension in winding and uniform release from the bobbin when using, will be appreciated.

CONTRIBUTOR No. 192.

Cost and Lossage on Ribbed Tops.

EDITOR COTTON:

We shall be glad if the readers of "Knitting Kinks" will give us some of their experience on the cost of producing various types of ribbed tops.

We would also be interested in knowing something about the average percentage of waste and irregulars in the making of ribbed tops.

What is the normal proportion of ribbed top machines as compared with footers in a mill organization?

I. N. C. (PA.)

Two-Color Vertical Stripes on Hose.

EDITOR COTTON:

In answer to the query of "G. T. (Pa.)" in a recent issue of "Knitting Kinks" relative to making vertical stripes of two colors on a Banner machne. I am inclined to think that he has been confused with the horizontal and vertical stripes. It takes two different attachments for these classes of work. The horizontal attachment will make stripes of two colors, but the vertical attachment will only make stripes of a single color.

The two-color reversed plaiting vertical stripe to which "G. T." refers is no doubt manufactured by some mill which has its own attachment. The Nolde & Horst Co., of Reading, Pa., have been manufacturing vertical stripe hosiery with two colors for the past ten or fifteen years, to my knowledge. The attachment that they use is their own, and I am inclined to think that they have a patent on it.

C. T. (TENN.)

Getting a Long Loose Course on Ribbers.

EDITOR COTTON:

In the June issue of COTTON I notice that Contributor No. 752 is having some trouble in making a loose course on Brinton and Wildman machines.

In my years of experience I have found that I could not make a loose course that would give satisfaction with the cam that comes with the machine to raise the dial needles, but have found that by using a wire to replace this cam I could get a very satisfactory loose course, with a minimum amount of cuts and drop stitches. If Contributor No. 752 will put on this wire, which he will have to make himself, and adjust it so that the dial needles are raised about the same amount that the cylinder needles are lowered and so that the highest point of the dial needles is directly over the lowest part of the cylinder needles, he will certainly get a satisfactory loose course, especially on the kind of work he is making.

My experience has been that the 300 needle, 4¼ cylinder machine on 18s combed yarn will run better than anything I know of, or at least as good. If he finds that it is inclined to cut a hole occasionally in the loose course he can set the wire to where the peak of the dial needles will be just a little in the rear of the lowest place of the cylinder

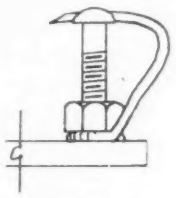

FIG. 1

needles. This will help some. Also, care should be taken to not let the wire rub the cylinder, as this will cause trouble, but run it as near the cylinder as possible without rubbing.

If the drop stitches are occurring on the dial needles it will likely be caused by a stiff latch needle, or if the drop stitches are on the cylinder, he may be lowering the cylinder needles too much. However, if it occurs where the loose course laps, this can be greatly relieved by taking the needle from which the stitch was dropped off, and breaking the bottom part of the butt off. This will likely stop it.

For the Brinton machine I have found the wire shown in the illustration Fig. 1 most satisfactory. Also, note in illustration Fig. 2 a form on which these wires can be best bent. A tempered steel or piano wire 1/16 of an inch in diameter is used. The figures will give the principal dimensions.

To bend this wire properly, place the end of the wire against *A*, then bend it around *B*, this making a ring in the end of the wire. Then screw out *C* and put the ring on the

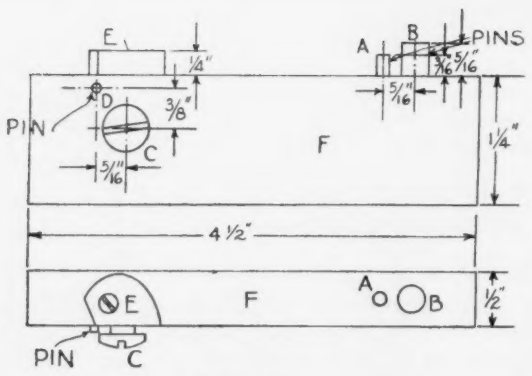

FIG. 2

screw and screw down so as to hold the wire securely. Let the long end of the wire come out by *D*, making a sharp bend around corner of *F*. Then bend it around *E* and cut it off. This will make a wire that will fit very well. Of course there will have to be some adjustments in adjusting it to the machine. If Contributor No. 752 wishes, I will send him one of these wires bent on my form so that he may try it out.

FIG. 3

For the Wildman machine I found most satisfactory a wire bent like Fig. 3, which can be bent in a vise, and of course this is also adjusted to suit the particular machine.

I trust this will be of help to Contributor No. 752, and believe it will. H. H. A. (TENN.)

EDITOR COTTON:

Trouble with cuts and drop stitches on Wildman and Brinton ribbers in trying to secure a loose course large enough was reported by "Contributor No. 752" in the June issue of "Knitting Kinks." I note he is using an 18s/1 combed yarn for his 300-needle machines, which seems to be pretty well in line. But when a mill uses yarn that is light for the gauge, difficulty will be encountered in trying to make a loose course of the right size without having these long stitches in the loose course.

The way to overcome this, I have found, is by lowering the dial and drawing a longer stitch on the cylinder needles, thereby pulling the stitch further down in the comb of the cylinder and preventing the loose course stitch hanging on the cylinder needle because it will not follow the needle down the slot.

This will mean a re-adjustment of the loose course cams, both dial and cylinder, and probably a re-setting of the dial stitch cam. This will necessarily cause a re-setting or a readjustment of the punch or knot detector, because the space between the dial and cylinder is much smaller and any knot, slug or mote would tend to cause the fabric to hang between the dial and the cylinder. If the bunch detector is set low enough, no difficulty should be encountered by running the dial set low in this manner, which should be in the neighborhood of 1/32 inch; that is, the dial needle should be 1/32 inch above the top of the cylinder comb.

C. B. (N. C.)

A Foreman and His Duties.

EDITOR COTTON:

Once a month the foremen and foreladies in our mill get together and the superintendent gives them a little talk, and then the foremen and foreladies go and give their workers a little talk on the same subject. I believe this kind of a proposition pays, for it provides a means of teaching the help the advantages of better service, and quality and quantity production. I am sending you the outline of one of these so that you may pass it along to your readers if you think it is any good.

The superintendent has a blackboard in the room, and to illustrate his point, he puts on it a drawing, upon which he bases his remarks. In this particular case, he drew the picture of an oak tree, and said, "We have here on the board an oak tree, a tree that will stand the storm and endure all the knocks and bumps. So we as foremen ought to stand as firm as this oak, stand to meet all kinds of weather and conditions.

"And as the oak branches give shade to the traveler, so ought we to try to help those who are under our supervision. And as the rain gives water to the roots, of the tree, so it may grow strong, just so should each word spoken by us be as a drop of rain, soaking into the human mind that it may grow better and stronger. And as the roots and rain give strength to the tree, so we as foremen must give to and lead the help and all pull together, and we will make a success by building an organization as strong as the sturdy oak."

I think it is a good thing for the foremen in a knitting mill to get together for about fifteen minutes. We all know that we are passing through an age when men and women are breaking laws in many walks of life, and I believe it is up to the foremen to try to teach the men and women what is best in life. Cooperation depends upon confidence, and both are necessary in successfully dealing with men and women. The foremen should get along well with each other, and should be able to lead rather than drive the workers. A bad temper is a thing of the past in management, and the foreman must be a teacher and a leader, and not a driver.

Handling men and women is like selling goods. We should never make a sale without giving thought to future relations. A sale is made only when the salesman and the customer agree upon a certain thing. We should therefore work for continuous agreement and try to handle every transaction in such a way that the men and women will want to do business with us for years to come. I believe a foreman should use good judgment in making a promise, and above all should never make a promise that cannot be carried out. For the foreman to obtain the highest efficiency from his workers, it is important that each one understand all about the job he is doing; and each should be made to realize just what part his particular job has in producing the article made by the company.

Foremen should bear in mind that the first week is the hardest for the new worker. No matter how good he or she may be it is well to give them special thought and attention during this period, while they are becoming accustomed to the new surroundings.

The foremen are the representatives of the company and it is as much to our interest as to the company's that the impressions formed by the new workers be good ones. Our attitude will be reflected throughout our departments, not only because our help will reflect our ideas, but because most of us select those whose thought and effort most nearly coincide with our own. We are not only the leaders, but we are also the examples of our workers. If *we* are not fundamentally loyal, dependable and honest, inside the mill and out of it, we cannot expect to see these characteristics in our help. And remember that everyone must cooperate to the fullest extent. The employer cannot do it all alone. It takes both the employer and employee.

J. C. (PA.)

Preventing the Cutting of Corner Holes.

EDITOR COTTON:

Some time back I noted a question in "Knitting Kinks" regarding the George D. Mayo machine cutting corner holes. Here is my suggestion for a remedy:

Have the stitch cam to fit the needle butts without being tight, at the bottom of the stitch cam with the needle crosswise on the side of the stitch cam. See that the needles have no loose rivets or stiff latches, and that the bumpers on the sinker cams are set so that the sinkers clear the needle heads when coming through the fabric without pushing far enough for the sinkers to cut the stitch. Then adjust the outside finger screw for the gore line so that the stitch, when the machine jumps off the heel and toe, is the same as in the body and foot of the sock. If the running gear is well oiled, and the foregoing suggestion carried out, there should be no further trouble along this line.

N. F. (N. C.)

Winding from Skeins to Bobbins.

EDITOR COTTON:

Could you give me some information through "Knitting Kinks" in regard to winding colored artificial silk from skeins to bobbins? If we wind this a little soft it pulls off in bunches at the knitting machine, and if we wind it a little hard we have trouble in plaiting.

I hope that some of the contributors to "Knitting Kinks" can give me some suggestions that will aid in this trouble.

S. T. (PA.)

Prefers Female Knitters.

EDITOR COTTON:

As you have asked my opinion concerning which make the best knitters, men or women, I will answer by giving several reasons as to why I cannot agree with "K. L. J. (Ga.)," whose letter appears in the June number of COTTON. However, he brings out one point which is good, that is, in regard to fixers being developed from the men knitters. But, on the other hand, I can give him three reasons to his one, why women or girls make better knitters than do the men or boys.

I have been in the hosiery business for twenty-four years and have worked both men and women. At the present time I am working women and girls on the day line and boys and men on the night line, which affords me an excellent opportunity to study them both, and one point is, every superintendent and fixer knows that when machines are kept clean and free from lint and loose threads they run much better and make less waste and menders. I find that a woman or girl will keep the machines cleaner than will a man or boy. It seems to be the nature of a woman to want things clean around her and around her work.

Another point is, every boy who goes to knitting looks forward to developing into a fixer, which cannot be done in every case, and as soon as he finds that he cannot be a fixer he is ready to leave for something better. A girl or woman knowing that she cannot become a fixer is satisfied to knit.

Again, a girl is better for string work because she uses more care in cutting her work. Every superintendent, fixer or looper knows that the cutting of work at the toe must be done with a great deal of care or it cannot be looped or sewed properly, and I find that a woman or girl will use more care than will a man or boy. As much care should be used in this operation as a dress maker uses in cutting out a dress, and how many of the readers know of a boy or man who is a dress maker.

I think that a woman or girl is better suited for this work and I hope that the boys will not fall out with me for saying this. I have nothing against them, only I think a woman or girl is better fitted for this kind of work.

H. O. S. (GA.)

Bent Latches on Pineapple Stitch.

EDITOR COTTON:

We are making a pineapple stitch, ladies' 200-needle stocking on the Scott & Williams K machine, using a 48-gauge, No. 93 latch needle. Our number of bent latches we consider excessive, and anything your readers can suggest for reducing the number of bent latches will be appreciated. We use this long latch in order to tuck the stitch, of course. Our machines make 180 r.p.m. D. T. (N. C.)

Throws Off and Makes Hole on the Sinker Line.

EDITOR COTTON:

We make a sinker drop stitch heather half hose, sample enclosed, on a 200-needle Acme machine. The goods are 176-needle . We have trouble with the needle throwing off and making a hole on the sinker line, as shown on the sample. Can any of your readers make any suggestions as to how this might be overcome? T. T. (N. C.)

To Prevent Oil Spots on the Work.

EDITOR COTTON:

One cause of large oil spots on stockings made on Scott & Williams machines is oil dripping slowly from the bottom of the needle cylinders into the work pans. Any stockings which are left in the pans during the noon hour, or overnight, will have these spots. All work should be kept out of the work pans during these two periods.

RYMI.

The Yarn Market

For the entire past month, as it is reported here, the Philadelphia cotton yarn market operated along upon about the same level it has maintained recently. Conditions seemed to be pretty much the same with few new factors being introduced for speculation or comment. Insofar as price was concerned, reputable reports indicate there was somewhat of a strengthening; comparisons of the rates appended hereto with those published last month show no ground lost, with improvement in some specific cases, and a generally more firm basis throughout the whole list.

Short selling and speculative activity seems to have about disappeared from the market, and there has been very evident a continued firmness in the stand taken by spinners with reference to selling below replacement. There will always be business done below the prevailing levels, just as some numbers will bring premiums, but these are exceptions. For the most part, the mills appear much more determined than ever to secure their prices. They figure them down as closely as possible, they state, and are familiar with the dividing line below which any accepted orders will be filled at a loss to them.

This attitude on the part of the spinners has affected the dealer's activity and ability to transact affairs, as he apparently is realizing the futility of conferring with his mills on small-lot business from consumers whose top price fails to meet the mill's bottom rate by a few cents. This condition is general, of course, in view of the manner in which business is being transacted—that of small orders which would not warrant much argument. On such larger orders as do come in, however, the matter of trading is made possible and it is an entirely different story.

The Government crop condition report and estimate issued at the first of July had not been expected to create any revolution in the market here, but the large crop estimate, resulting in the slump in cotton, influenced yarn rates to a certain extent, also, but very shortly afterward the market cleared itself of any depressing influences thereof, and the effect seemed to be only temporary. It resulted, too, in the withdrawal of some consumers from the market, which naturally was to be anticipated in view of the nature of the report.

The co-incidence of the report and the holiday season, together with the usual semi-annual inventory period, presented more or less of a confused situation. Afterward, however, as the smoke cleared away, there appeared more general genuine interest from the using end of the market. For individual mills to request advance delivery on goods sold a month or so ahead is ordinarily nothing unusual, but for this to take place immediately after an inventory gave some factors reason to believe that in the stock-taking the shelves were found not to be as well-filled as had been supposed. Some thought this an indication of the true condition of the consumers, and that further time would develop more business. The trend of the Government report, however, would offset this to a certain extent.

With regard to the spinners, there continued an increase of curtailment, somewhat, and other conditions tending toward a firmer stand on their part not to take business at a loss to themselves, or to operate for the sake of operating and store up goods for which they had not received orders. The spinning division indicates considerable interest in the plans on foot to gather and disseminate information as to production, distribution and stocks of cotton goods, including yarns, and leaders in the field believe much good will result from such a practice.

As a whole, the market feels good, and prominent factors look for an early approach to similarity in price ideas on the part of sellers and buyers.

Philadelphia market prices on July 17th follow:

Single Skeins.

4s to 8s	34½@35	10s	36
12s	36½	14s	37
16s	37½	20s	38
24s	41	26s	41½
30s	42½		

Single Warps.

8s	36	10s	36½
12s	37	14s	37½
16s	38	20s	39
26s	42	30s	43
40s	54		

Frame Spun Carded Yarn on Cones.

8s	36	10s	36½
12s	37	14s	37½
16s	38	18s	38½
20s	39	22s	40
24s	41	26s	42
30s	42@42½	40s	53

30s double carded ..... 45@46
30s tying-in ..... 42@43

Two-Ply Skeins.

8s	36	10s	37
12s	37½	14s	38
16s	38½	20s	39
24s	42	26s	43
30s	44	40s	53@54

Two-Ply Warps.

8s	36	10s	37
12s	37½	14s	38
16s	39	20s	39½@40
24s	43	26s	44
30s	45	40s	54@55

Carpet and Upholstery Yarn in Skeins.

8s and 9 3-4 slack 36½
8s 3-4 hard white warp twist 35½
8s and 9s 3-4 tinged tube 34
8s 3-4 hard twist waste 33

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	55	20s	56
24s	58	30s	62
40s	70	50s	78
60s	87½	70s	97½
80s	1.12½@1.15		

Single Combed Peeler Yarn on Cones.

18s	48	24s	53
30s	61	36s	65
38s	66	40s	68

Mule Spun Carded Yarn on Cones.

10s	41	12s	42
14s	43	16s	44
18s	45	20s	47
24s	48	26s	49
30s	50	40s	58

Mule Spun Combed Peeler Yarn on Cones.

10s	49	12s	50
14s	51	16s	52
18s	53	20s	54
22s	55	26s	59
28s	60	30s	61
36s	63	38s	66
40s	69		

The American Well Works, Aurora, Ill., have perfected a new line of totally-enclosed deep well power heads, the entire main frame surrounding all gears. All main bearings and gears run in oil, and all gears and pinions are machine-cut, and the pinions and pinion shafts are cut from a solid piece of machinery steel. The crank is of solid one-piece construction. These heads are made for both six and twelve-inch strokes, for operation with single stroke cylinders, and are furnished for electric motor or gasoline engine drive. They are adaptable for use with tanks, and may be furnished complete with tanks and automatic starting and stopping devices. Frost-proof attachments are furnished for outdoor installations. The company's Bulletin 180 describes them.

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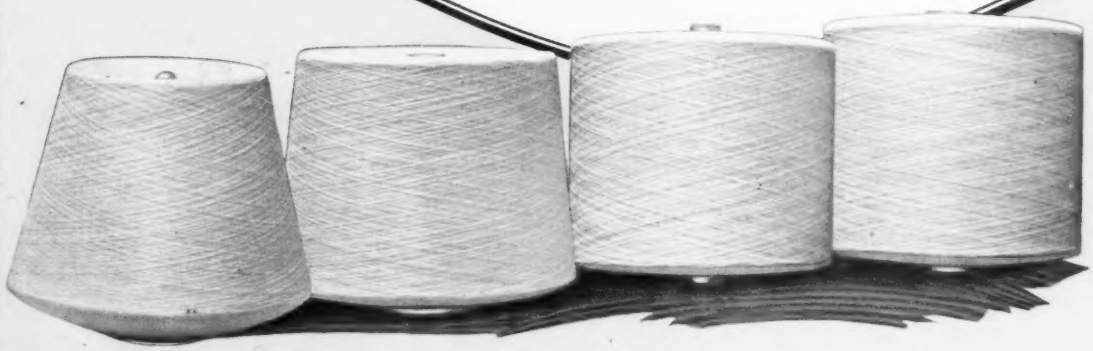

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The Knit Goods Market

Happenings in the knit goods primary markets during any given period usually are more easily summed up at the end than they can be measured while they are in progress or forecast at the outset. Surface indications in the last month or two bespoke quiet trading, and aside from the business that was placed at the openings of children's hosiery and light weight underwear for the season of 1926, the knit goods situation in July was devoid of features. Yet it appears, from trustworthy reports from mills and estimates of jobbers, that the distributing trades to the end of the month had bought about 70 per cent of their hosiery requirements for Fall. There was a better showing as to heavy weight underwear, but no activity, and in light weights a fairly good start for the next season was made. Sweaters were comparatively inactive due to a variety of causes, while bathing suits went through two months of briskness surpassing anything in that respect witnessed in a number of years.

Business in hosiery for the first half of 1925 finished better for mills than for the corresponding period of 1924. When this was written Department of Commerce statistics from manufacturers for June-July were not available, but reports to the end of May showed that about 335 reporting mills booked orders for a total of nearly 6,000,000 dozen pairs more than in the first five months of last year. As shipments for the five months' period amounted to only 863,036 dozens more this year than last, it would appear that more forward business was placed; that jobbers are buying further ahead. That they are doing so is indicated in jobber estimates of their contracts for Fall goods. In this connection it is interesting to note that the average number of manufacturing establishments reporting to the Bureau of Census of the Department of Commerce this year was 326, comparing with 340 for the corresponding period of 1924. With 20 fewer manufacturers telling the Department what they were doing, there was a substantial increase in distribution and forward business.

The bulk of the increase must be credited to silk hosiery, in which there has been something like phenomenal expansion in respect to production and consumption. The market was short of silk goods at the beginning of the year and is not oversupplied now. It may be, in full fashioned, later in the year, for a considerable number of important jobbers have covered for the Fall and Winter season and new machinery is being installed as fast as it can be turned out by the Textile Machine Works in Reading and brought from the factories of several German builders. Some large buyers say they anticipate a surplus. Others, equally well informed, say there will not be, and advise retailers to put their orders in early.

Two major reasons are assigned for the tight situation which developed this year in full fashioned silk hosiery. One is the fact lower prices have caused an increase in its use. The other goes back to the Fall of 1924, when there was much uncertainty in most trades as to what effect the November elections would have on business generally. While this lasted, manufacturer and distributor operated along lines of ultra conservatism, and no one was accumulating merchandise. Then, when it dawned on the minds of business interests that the consuming public was going along as usual, regardless of what might be the Administrative policy, dealers began calling for goods and mills had to make them. The call was urgent and gave impetus to production, which had to have some time in which to catch up. That is what it since has been trying to do.

On a day a few weeks ago thirteen Philadelphia full fashioned hosiery mills had the help wanted card displayed. Most of the seamless mills seemed to have no occasion to employ additional operatives, but for several months previously these also were openly in the market for help. For them a slowing down in July was but the logical result of a speeding up in May and June, when many of those making silk hosiery were rushing orders through for British account for landing goods before impost duties on American hosiery went into effect.

The United Kingdom took considerably more than half of the silk and artificial silk hosiery exported in May—83,390 dozens of the former and 95,656 of the latter, and 22 per cent of the cotton hosiery that left American docks for foreign ports. In the absence of official statistics, it may be said more American silk and artificial silk hosiery was shipped to the United Kingdom in June than in May, and probably as much of the cotton construction. Manufacturers say they are busier with orders for domestic account than when they were rushing goods for England, and those in silk lines state they look for no material drop, while anticipating that by September British interests will be as active in the American markets as they usually were. Business from that quarter will be needed to keep the seamless silk hosiery industry moving at its former pace.

That the trend, in women's lines, toward full fashioned silk is gaining headway is recognized by manufacturers, as evidenced by the fact not a few hitherto confining themselves to seamless construction are installing full fashioned machinery—the Davenport and the Rollins mills, both selling to retailers, for instance. The popularity this year of chiffon hosiery was a big factor in the demand for silk. A conservative estimate is that three pairs of five strand are required for the same period of service as two of 10 strand, some factors insisting the proportion is two to one. However this may be, more silk stockings are worn because almost 50 per cent of the aggregate comprises chiffons of anywhere from two to five strands. A bumper white season also had much to do with the further popularizing of silk. This may be inferred from the fact that the plebian mercerized became a bigger seller by reason of the call for white.

If sales of chiffon hosiery for Winter increase this year in proportion as they gained over Summer in former years, there is another big production period ahead. Leading jobbers have contracted liberally for Fall, and orders from the less timid retailers, who are placing advance business, call for the sheer. Important department store buyers are making provision for a chiffon Winter, some of those commanding the better class of trade specifying 51 gauge. In the same establishments there is heard the prediction that women's full fashioned silk-and-wool hosiery in sports colors and heather will make an appeal. The seamless will enjoy a strong lead, however, as in the silk-

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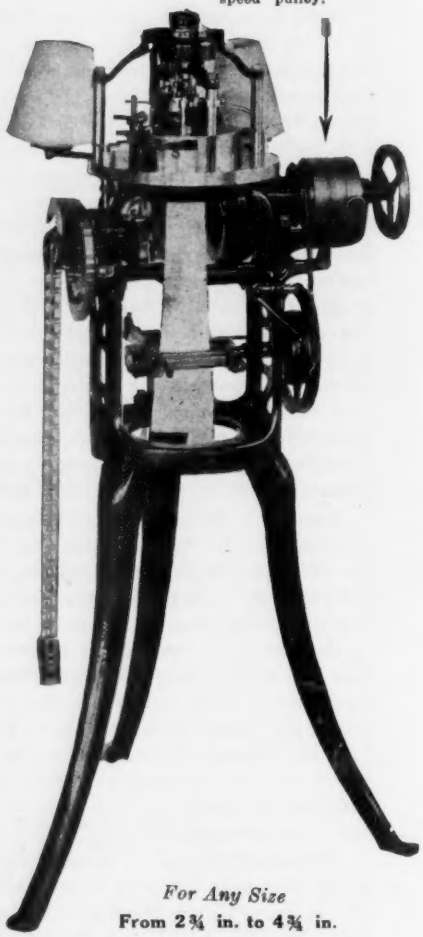

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and-wool the popular price is a dollar a pair. Two-tone stockings in this class promise to take a foremost place.

Artificial silk hosiery, for men and women, has become more acceptable with improvements which have been made in the fiber. Reports indicate increasing production, and last month sales to jobbers were in stronger volume, but mostly for nearby deliveries. Not only is the fiber more enduring, but mills are making a better stocking and women have learned by experience how to treat it advantageously in the laundering. All of which, with the lower price in its favor, makes the rayon stocking a lively competitor of the latch needle natural silk, which has had to yield some to the spring needle.

A Philadelphia manufacturer of spring needle 10 strand hosiery sold 47 per cent more dozens in the first six months of 1925 than during the corresponding period of 1924, and, contrary to the policy of many, increased his productive capacity. It is his opinion that output of latch needle silk has been increasing more than that of spring needle; that in their enthusiasm over the possibilities of the latter, some manufacturers over-equipped with spring needle machinery and have discarded it, substituting either full fashioned or latch needle machines.

It appears that the larger mills making spring needle hosiery have fewer accounts, chiefly those of chain stores and catalog houses. These buy in as large quantity as the average big jobber and at the same price, and thus can put the stocking on the counter or in the mail at a dollar a pair, which is the prevailing regular price for a latch needle hose of the same gauge and number of strands of silk. A department store in July exploited latch needle chiffons at 79 cents, for regulars. Another had a sale of German-made full fashioned service weight silk stockings at 85 cents. Offerings such as these were construed by some interests as meaning that somebody had been unloading cumbersome stocks. But the same interests admitted they found it difficu't to locate a full fashioned mill in distress for want of orders.

Manufacturers were willing to contract, but few had anything for immediate, and acceptance of an order carried an obligation on the part of the buyer to supply specifications promptly. Mills are not eager for orders in the gray, particularly if they operate dyeing and finishing plants, and several are known to have declined substantial business in eight strand goods unfinished. Buyers would find it easier to place contracts if they come out in the open with a fair offer of price, instead of beating around the bush for an intimation of how little a manufacturer might be willing to accept.

Values in the raw silk market and demand for hosiery combine to put the manufacturer in a more favorable position than he has enjoyed for some time. He does not know how long existing conditions will last, but seems determined to make the best of them while they do. The silk hosiery season has been one of many surprises, and the most surprised are distributors who deferred their commitments until the season opened.

If jobber attitude toward infants' socks can be accepted as a criterion, distributors may be said to be in a frame of mind for operating in hosiery generally on a basis more satisfactory to mills. The opening of juvenile lines early in July went off with a bang that might have been interpreted as an echo of that of Independence Day. The big operators

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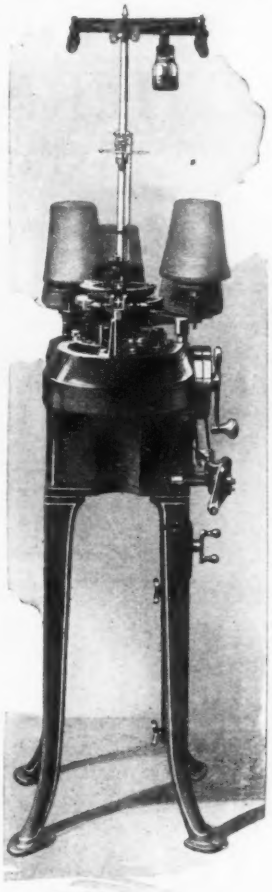

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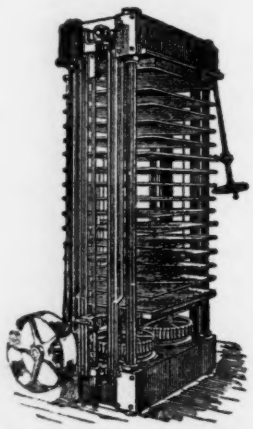

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were there, and they bought socks for next year. Substantial contracts were placed by some leading houses, and a chain of stores, which did not wait for the jobbers to operate, is said to have placed the largest order written to the end of the month. The initial business taken exceeded by considerable that of 1924.

Artificial silk preponderates in the construction of children's short hose. The market for the fiber was viewed as firm and unlikely to suffer price disturbance. The socks came out in many new and attractive patterns, and stocks for the current season were being cleaned up in jobbing houses and retail stores. Conditions, therefore, were most auspicious, and, notwithstanding manufacturers were jockeying over an opening date for several weeks, the delay was time well lost, as developed when it became apparent mill prices were likely to be adhered to, a most refreshing contrast when the competition of last year is recalled.

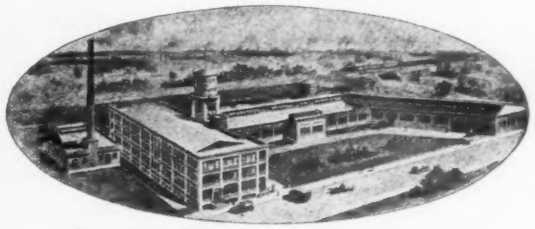
It was reported there was some price shading. This involved a few of the less showy patterns. Pivotal numbers stuck where they had been put. Mercerized socks with fancy stitch tops, presumably a 25 cent retail proposition, opened unsteady. They will be seen in chain stores at 10 cents a leg, and instead of the former 35 cent full mercerized sock as a leader, one line with rayon striped tops easily could be passed over the counter at 30 cents and yield a retailer his full 50 per cent margin over cost.

Fancier socks and lower prices are looked at as promising a season which will call for volume production. In order to escape the delays in delivery which gave rise to so much complaint in the early months of the year, jobbers intend to supply specifications promptly, and a few mills had goods in work for 1926 while completing fag ends of orders for the 1925 season.

During the flurry over short hose, a quiet business was being done in the New York primary market in children's sports ribs, lines in which jacquard patterns again are conspicuous. A manufacturer in Reading, Pa., who was not represented, physically speaking, at the opening of misses' and boys' lines, had sold up for the year some months ago. His mill is supplying an exclusive jobbing trade with lines which formerly were made in Germany. The tops for the product of the mill in Reading come from Germany, whence the executives of the establishment came two or three years ago. They sell to only very large concerns.

To sell for large accounts and a few of them is the ambition of manufacturers who find the hand-to-mouth business of distributors unsatisfactory. It is understood that the Rabbit Hosiery Mills, intended to be started this year in Des Moines, Ia., for the manufacture of children's hosiery only, will be a big-house concern. An eastern mill making women's silk hosiery sells to only seven establishments and at times is busy morning, noon and night, at present operating to single shift capacity. Numbers of smaller mills making good standard lines pride themselves on having less than a dozen customers, and along the line of centralization in hosiery is jobber control of mills.

Among large distributors heavily interested financially in hosiery factories are Carson, Pirie, Scott & Co., Ely & Walker Dry Goods Co., Emery Beers & Co. and Marshall Field & Co., to say nothing of several hosiery specialty jobbers. Community of interest among the big mills and big distributing houses is no longer a vision, and it would appear that after accounting for what hosiery is sold direct



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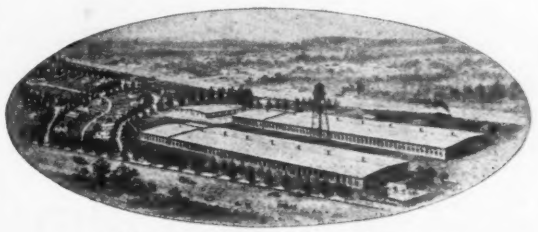

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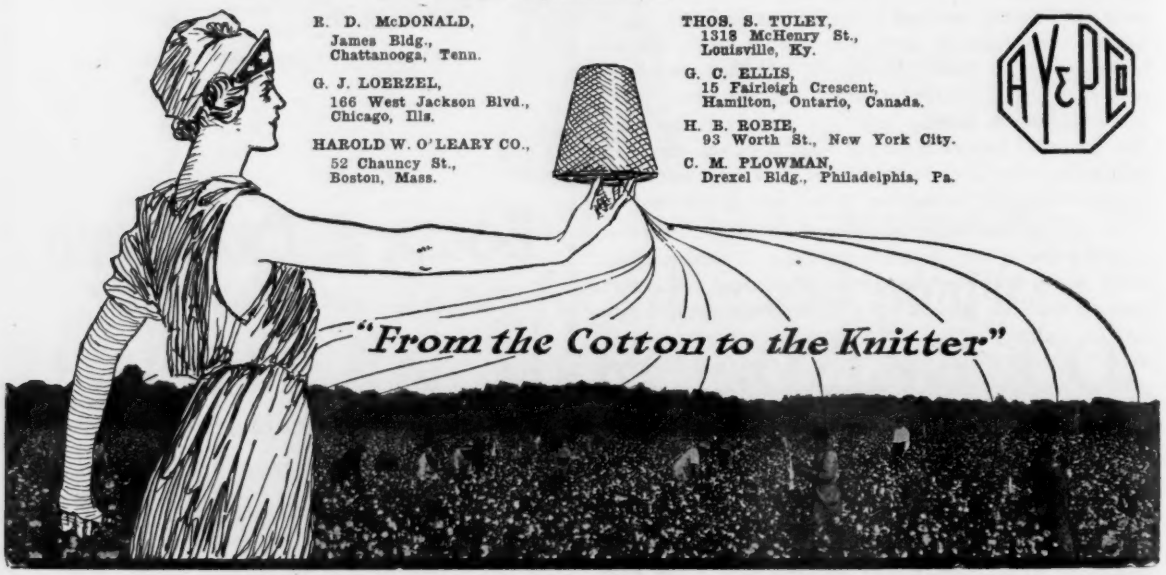

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RIGID TRAVERSE MOTION. This is a radical departure from the usual traverse motion commonly used. Our patented construction insures uniform spools without frequent re-adjustment of traverse motion.
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to retailers and direct from mill to consumers through canvassers the hosiery field of the jobbing house that carries hosiery simply as one of its lines is being gradually narrowed, and more speedily since novelties became the craze.

Novelty hose for women did not make the dent in staples that was predicted for it this year. Aside from strictly sports stockings, some of the high class shops say, fancies have been disappointing, and knee length stockings almost a flat failure, while roll tops—rolled at home—seem to have tightened their grip on feminine fancy. As to men's half hose, novelties still are in strong call, although it is common report that they were waning slightly in popularity last month.

The fact that the Interwoven Stocking Co., the largest American manufacturer of men's stockings exclusively, only a few months ago entered the novelty field, encourages some close market observers to believe fancy half hose has not yet gone over the top; that the appetite for stripes will be whetted by the showings for Fall and Winter. But the sun is thought to have set on the day of plaids and gewgaw patterns which either tire the eye or become so commonplace that the well dressed man will discard them. Manufacturer and dealer are skeptical of the extreme in pattern half hose.

A new line of drop stitch half hose in stripes put on the market somewhat recently is of alternate bands of mercerized yarn and artificial silk plaited on mercerized in ten patterns, each in two colors which are produced in cross dyeing. The sock probably might be sold profitably by retailers at a half dollar a pair, but looks like a big winner at 59 cents, special.

Silk half hose in plain colors, which for a time was sidetracked by novelties, is reported in better call, demand for high grade split foot socks being especially good. But prices are not satisfactory to mills. A 12-strand sock from a Pennsylvania mill is priced $5 a dozen to jobbers and is rated a better piece of merchandise than is being sold from door to door at a dollar. But jobbers object to paying $5, and a manufacturer in Philadelphia gave up making silk socks, except on order. He says he never has more than a case in stock and will make up none for reserves.

While plain cotton hosiery of practically all descriptions is at the tail end of the procession in the primary markets, prices show little change. Market firmness in this division can be attributed to severe curtailment of production. Output is so centered in a few large establishments that there is not that severe competition as when 176-needle half hose, women's "pound 4" goods and misses' coarse gauge carded ribs and fine gauge combed were being quoted regularly in every trade publication. As to lines which have supplanted plain cotton, construction is so complex in variety that quotations are virtually meaningless unless accompanied by minute descriptions.

Quotations on men's and women's mercerized and combed hosiery vary only slightly from week to week, fluctuating with demand, which for some time has not been brisk. There was a better market recently, however, for women's plain standard mercerized. A buyer was in the market for 1000 dozens, but wanted a shaded price. Full mercerized 220-needle half hose were being offered at $1.70 a dozen in June. Early last month the same sellers were quoting $1.72½, and mills in Georgia and North Carolina which were offered orders for from 1,000 to 3,000 dozens for

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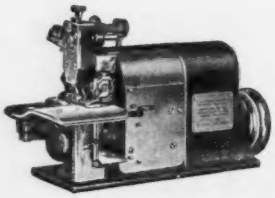

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deliveries within the month declined them, and would promise no shipments before the middle of September. Southern manufacturers also were adhering to $1.60 for misses' fine gauge combed ribs. Orders at shaded prices were to be had.

Underwear.

A between-seasons situation exists in the primary markets for heavy weight cotton underwear. Jobbers, except in some sections of the West, have not taken much business, it is stated by buyers for some of the better known Pennsylvania houses. At one important establishment, however, it was stated sales to date run ahead of those for 1924.

Threats of a strike of anthracite and bituminous coal miners may have interfered with the business of Philadelphia jobbers. While houses in Pennsylvania may not be able to supply a criterion for gauging the state of trade elsewhere, it is the general opinion that the bulk of what remains to be bought for piecing out for Winter will be taken after approximately definite reports of the cotton crop come out. Retailers, it is thought, will place only very light initial orders, and a final government estimate of a large yield might endanger whatever business had been placed for future.

Some few mills find their jobber patrons tuned up for a brisk Fall and giving little attention to intimations of a strike or anything else of a disturbing nature. These report shipments and duplicate orders about as usual, as do southern mills whose lines were bought early and passed along to the retail trade. The rank and file find jobbers as a body disposed to wait for developments in cotton and labor.

Light weight underwear, although opened for the next season at a time when the cotton outlook was admittedly uncertain, got off with a right fair start. Certain buyers had been nagging manufacturers for several weeks in advance for an intimation of prices, and there seems little doubt that some business was placed, tentatively, at least. It was noted that Pennsylvania manufacturers were extensive buyers of yarns, during two to three weeks before the opening, and it may be said they were as well able late in June to name prices as in the middle of July. They are said to have bought at around spinners' cost, which, of course, is variously estimated. Obviously, they were inclined to wait for the New York State manufacturers to set a pace, but it is understood in the trade that a few of the Pennsylvania mills booked a sprinkling of orders at what developed subsequently was the market.

The light weight situation was regarded as in favor of mills, as jobbers were bare of stocks for taking care of fill-in orders from retailers for the current season, while retailers, buying as they sold, will finish the Summer with practically no goods to be carried through Winter. This seems to be true of men's and women's ribbed garments, bal briggans and men's and women's nainsook garments. Throughout the entire range there had been a general clearance of stocks.

Ribs and nainsook athletic suits were at times in short supply. There were occasions when retailers were calling for spot shipments and jobbers did not have the goods and could not get them inside of a week to ten days. Both elements lost sales as the penalty for carrying no stock and placing sole dependence on manufacturers, who were afforded an opportunity to demonstrate to the trade just how hand-to-mouth buying may operate.

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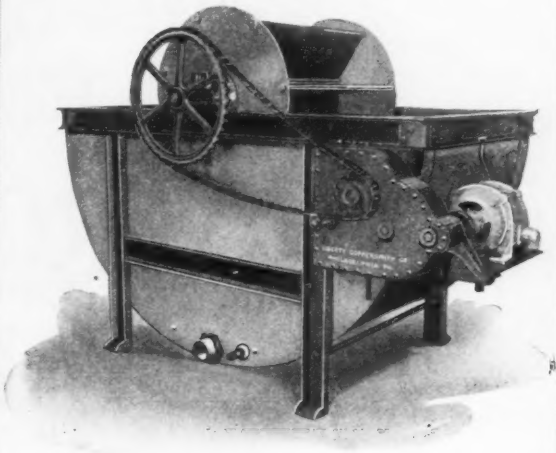

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Retailers will, in the future, buy as they bought this year, but jobbers, menaced with a slipping of their trade, will not so long defer as has been their policy. This was evidenced in the business placed following the opening, when prices that came out proved satisfactory to buyers. It was known there would be another visitation of buyers to New York in August, for the mid-year meeting of the Wholesale Association of Dress Goods Fabric Buyers, which is an auxiliary of the National Wholesale Dry Goods Association. By September, it is expected, jobbers as a class will have completed their initial contracting of underwear for Spring, although it is indicated in answers to a questionnaire that several purpose doing no buying of cotton goods for Spring until November and December, one house stating it probably would not operate before January.

Nainsook underwear has been in especially strong demand, and children's lines were practically unobtainable, at times, for deliveries inside of two weeks. One well known jobber said his house was in a plight for 72-80 suits for men, stating, "We can't get enough." How far nainsooks cut into the knitted this year can only be conjectured, but as several manufacturers of the knitted will add or have added nainsooks to their line for next year it is to be assumed the gain for the latter was quite impressive. The P. H. Hanes Knitting Co. was one of the pioneers among manufacturers of knitted underwear to turn to nainsooks, and it will be recalled that the company entered that field before bringing out knitted light weights. At the moment it looks as though there is to be keener competition in nainsooks and less of it in the knitted, in which ribs appear the better guess.

A few years ago sweater manufacturers were complaining because a number of underwear manufacturers had entered the sweater field when it was felt there was a better opportunity there, with underwear being overproduced. This year, after a brisk season in bathing suits and a slow season for sweaters, a number of manufacturers of the latter have gone permanently into the making of bathing suits. Some will wish they had not been so hasty.

Mill and jobber stocks of bathing suits were depleted before the end of the first hot spell in June and were not ample for the second, in July. Orders for spot goods poured in. Mills made up many small lots, some of which were carried away by buyers, and in more than one instance a mill representative made personal delivery, carrying the suits in travel trunks as baggage. Later, some timid buyers who replenished stocks after their customers had bought elsewhere, made a survey of their holdings and cancelled orders. It was a short but swift campaign.

As the bathing suit has been so much abbreviated that the cloth for two can be knitted in less time than was consumed ordinarily in knitting one, some interests suggest there is more reason for less equipment than for expansion of plant. Those who are going ahead are banking on their exclusive patterns to carry them through a season profitably. Ribs will be the vogue next year, as was disclosed when the lines of practically all mills were opened last month, and jacquard patterns are promising of a future as bright as some of the colors.

Sweaters have lagged. This is what department stores say, and manufacturers other than a restricted number who were exceptionally successful with their cricket coats and match sets, do not dispute it. Women so robed themselves this year in bal briggan and jersey cloth that they felt they had little need for a sweater coat, whereas in former seasons the dressy ones had several, depending on how many skirts were embraced in the wardrobe.

There was a modicum of business in tuxedo coats and turtle neck white sweaters, but it lacked volume. Shakers, for men and women, seem to be the favorite in the guessing as to what will be worn in Winter, and the turtle neck and windjammer coats have some friends. But to the end of July no one seemed to know just what to put in stock.

A few mills are engaged on old orders and booking some new business. The majority are in need of business. All believe it is coming, but much of it so late that the year's volume may not measure up well. One thing is certain—if there arise a fraction of the demand for sweaters that for a time existed in the bathing suit field, there will be jobbers and retailers with not enough to go around and little likelihood of getting them, unless mills be flooded with orders this month. There seems a strong probability they will be, and some have covered for worsted yarns for meeting just such an emergency.

The Interest in Full Fashioned.

Announcements, official and otherwise, appearing in trade publications from time to time of installations of full fashioned hosiery equipment, supply a telling but inadequate picture of the expansion that is going on in this division of the hosiery industry. This is disclosed in first hand reports from machine builders and manufacturers, and even these may be said to be incomplete, so that it is to be assumed the increase in production of full fashioned silk hosiery is greater than is indicated by official figures dealing with expansion.

It is doubtful whether in any textile industry there has been as steady and rapid installation this year of machinery, measured by units, as in the full fashioned division of hosiery. This can be said without the slightest derogation of the seamless division, as indicated by the substantial gains in output. In the full fashioned, the year's greater increase remains to be recorded, as much of the equipment contracted for by manufacturers is yet to be installed.

It is conservatively estimated, by interests which have the data at their command, that the 1925 potential production of full fashioned hosiery will be double that of four years ago. If this sounds like exaggeration it will be interesting to make comparisons of statistics for the first four months of this year with those from the industrial census report of 1919, when mills reported a twelve-months' output of less than 2,000,000 dozen pairs of women's silk—full fashioned and seamless. This was about 1,000,000 dozens less than for the months January to April to inclusive, of 1925, the figures being taken from reports of only those mills reporting each month to the Department of Commerce.

Comparing the first four months of 1925 with the corresponding period of 1924, there was a gain of 36 per cent in the reported production of full fashioned and 15½ per cent in seamless, while of all classes of hosiery there was a slight decline, all emphasizing the steady trend to silk.

Not a decade ago the manufacture of full fashioned hosiery in the United States was confined to the East and Milwaukee, Wis., in the Central West. Now the industry is firmly established, in a half dozen mills, in the South.

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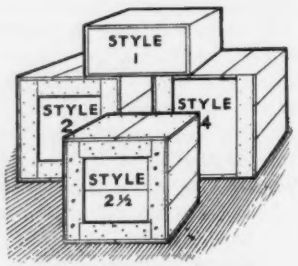
Box Shooks
—made of best grade North Carolina pine, planed smooth. Cut from thoroughly dried lumber to prevent excessive weight. Before you buy compare ours with others as to quality and price.



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Philadelphia, Pa., 300 Chestnut Street.
Reading, Pa., J. Blackwood, Cameron-Amer. Casualty Bldg.
Fall River, Mass., O. S. Hawes & Bro., 38 Rock Street
Toronto, Canada, Slater & Company, 53 Yonge Street

and has been planted on the Pacific Slope, in the commencement of operations last year in the mill of the Theme Hosiery Mills in Los Angeles, Calif.

The pioneer full fashioned plant in the South was that of the Durham Hosiery Mills, Inc., Durham, N. C. Now there are around a half dozen others, and two more will be added to the southern chain in the course of a few months, both in Tennessee, official announcement of new mills having been made by the Davenport Hosiery Mills, Chattanooga, and Magnet Knitting Hosiery Mills, at Clinton. And there has been strong intimation that the Smith Hosiery Mills, Chattanooga, is considering the installation of full fashioned machinery.

The larger expansion has been in Philadelphia, commonly referred to as the largest hosiery manufacturing center in the world, and in Reading, probably ranking second in importance. In five years the plant of the Berkshire Knitting Mills, in the latter center, has been fully doubled. the present capacity being around 1,500,000 dozen pairs a year. Other establishments there which have added to their equipment include the Nolde & Horst Co., I. C. Eberly's Oakbrook Hosiery Mills, Rosedale Knitting Co., Inc., C. Otto Hamel and the Busy Bee mill, the latter, however, making only full fashioned silk half hose.

Manufacturers in Milwaukee selling to the retail trade have augmented their plants, and a new mill is to be established in Des Moines, Ia., by the Rollins Hosiery Mills, also distributing to retailers direct, which will have an initial equipment of four to five units. As the Real Silk Hosiery Co., selling to consumers through canvassers, is reported to be interested in additional full fashioned machinery, it seems not improbable the Central West will have still another mill in this division.

A recent addition to the full fashioned industry in Philadelphia was the Claire Hosiery, established by the Belber interests, who more than a year ago sold their Albert Hosiery Co. plant to the Real Silk Hosiery Co., which, it is understood, will take the output of the Claire, operating 31 German machines of 39 gauge. The superintendent is William Stabert, recently with the Rivoli Silk Hosiery Co., Newark, N. J.

New full fashioned mills in Philadelphia include the Da Lu, organized by Louis Weber, Jr., treasurer, and Dana Carmer, secretary, of the Endurance Knitting Co., and the Howard Hosiery Co., which has been making only spring needle silk hosiery. Another new company is the Ajax, organized by S. D. Sanson, formerly president of the Lincoln Hosiery Corporation. The Ajax is installing new machinery and also bought a part of the equipment of the Lehigh Silk Hosiery Mills, selling to retailers, which has removed to larger quarters—a complete new mill—and will have a 100 per cent increase in production. Plant additions have been and are being made by the Apex Hosiery Co., the H. C. Aberle Co., which is building a large factory and will add materially to equipment; Cadet Knitting Co., Gotham Silk Hosiery Co., Brown-Phelps Hosiery Co., Quaker Hosiery Co., Rodgers Hosiery Co., Inc., Lorraine Hosiery Mills, recently acquired by the Triple Wear Hosiery Mills; Schletter & Xander, who have awarded a contract for an additional building; Haines Hosiery Mill and Lucille Hosiery Co., Inc.

Oscar Nebel, whose mill in Philadelphia was taken over some months ago by the Gotham Silk Hosiery Co., is engaged in the erection of a full fashioned factory at Hatboro, a few miles out of Philadelphia. And a full fashioned mill is in course of construction at South Langhorne, Pa.

The Textile Machine Works, Reading, Pa., which has been and is supplying a large part of the installation, is equipping a mill in Sidney, Australia, for the George A. Bond Co., so that American full fashioned machines have been set up in not only the four quarters of the United States, but also in the Orient.

The Textile Machine Works is turning out around 600 machines a year, and has been compelled, by lack of capacity to construct more, to decline a number of orders.

Seamless knitting machines served to popularize silk hosiery. Full fashioned machines have expanded that popularity, and between the two, silk hosiery is making perhaps greater strides than any other American textile product.

Among the Knitting Mills.

O. E. Kearns & Son, knit goods manufacturers, High Point, N. C., are erecting a 50x100 foot, two-story, addition to their plant to provide for increasing the capacity.

W. S. Mills Company, Bridgeport, Conn., and Kramer Hosiery Mills, Nazareth, Pa., are among the knitting plants recently to install the Finnell system of electric scrubbing.

Sultrene Mills, Gaffney, S. C., manufacturers of golf stockings, are considering the addition of machinery to their plant.

G. F. & S. Hosiery Co., Franklin, N. H., have started a plant for the manufacture of men's 124-needle cotton and wool half-hose.

Lynchburg Hosiery Mills, Lynchburg, Va., will, it is understood, erect a $12,000 addition to their plant.

The Juniata Hosiery Mills, Mifflintown, Pa., are establishing a branch plant at Ickesburg, Pa.

Ten additional 42-gauge Hilscher full-fashioned hosiery machines are being installed in the Wiscassett Mills, Albemarle, N. C., which will double the full-fashioned production.

Princeton Hosiery Mills Co., Princeton, W. Va., is installing twenty new knitting machines, which will give them an equipment of more than 100 machines, it is stated.

Crossingham Knitting Mills, of Germantown, Philadelphia, Pa., plan to remove their plant to Clover, S. C., according to a report.

Excello Hosiery Co., Hawthorne, N. J., is to erect a one-story addition, 50x132 feet.

S. M. McCracken, of Bristol, Tenn., and O. A. Moers, of Gate City, Va., have leased the Gate City (Va.) Knitting Mill from F. Y. Kitzmiller & Son Company, and will put the mill into full operation immediately.

Avalon Knitwear Company, Utica, N. Y., have acquired a city block in Anniston, Ala., and will erect a knitting mill with a boiler house, dyehouse, machine shop, etc. Equipment for this unit will be moved from the plant at Utica. John Hill, Healey Building, Atlanta, Ga., is the engineer.

The extension to the plant of the Magnet Knitting Mills, Clinton, Tenn., for the manufacture of full-fashioned hosiery, will be approximately 96x230 feet, two stories. Construction will be re-inforced concrete throughout, with the first floor of tar concrete laid directly on the earth. Steel sash windows will be used. J. E. Sirrine & Company, Greenville, S. C., are the engineers.

The formation of a new company to manufacture hosiery in England, in conjunction with the Richmond Hosiery Mills, of Rossville, Ga., has been announced. Machinery from the Georgia plant will be shipped to England for this purpose, it is stated. Alexander Kotzin, director of Ballington, Ltd., London hosiery merchants, has been negotiating with Garnett Andrews of the Richmond company in these plans.

The Arlington Hosiery Mills, Inc., New York, N. Y., recently formed with a capital of $20,000, will operate a local plant for which arrangements will soon be perfected.

The Victor Garment Co., Muncie, Ind., has taken over the local building formerly occupied by the Beebe Glove Co., and will establish a new mill for the manufacture of knit underwear. Improvements will be made in the building and about 65 knitting machines installed for initial service. The company will remove its present plant to the new location and will increase the working force to about 160 operatives.

The Strafford Knitting Mills, Inc., Philadelphia, Pa., recently formed with a capital of $100,000, will take over and expand the company of the same name, with mill at Wayne Junction, Germantown. It is purposed to advance the production at the plant. J. B. Mustin has been elected treasurer.

The Rochelle Knitting Mills, Inc., Rochelle, Ill., will operate a local plant. The new company is headed by George N. Grieve and Frank C. Carney.

The Van Dyke Knitting Co., Milwaukee, Wis., will soon begin the erection of a new addition to its mill, to be two-story and basement, 59x150 feet, at 880 South Pierce Avenue, reported to cost about $35,000. H. J. Esser, 82 Wisconsin Street, is architect, in charge.

The Capitol Hosiery Mills, Inc., New York, N. Y., plan for the operation of a local plant and will begin production in the near future. The company is headed by A. M. and A. E. Beldner.

The Deerden Hosiery Mills, Inc., Philadelphia, Pa., lately organized with a capital of $40,000, will operate a local plant. W. T. Stewart, Lansdowne, Pa., is treasurer.

Harry Gropper, president of the Gropper Knitting Mills, Inc., 70 Wyckoff Avenue, Brooklyn, N. Y., has leased property at 1655-59 Myrtle Avenue, corner of Madison Street, Queens, L. I., and proposes to establish a new mill at this location. It is said that plans will be consummated at an early date.

Mock, Judson & Voehringer, Inc., Philadelphia, Pa., recently organized with a capital of $200,000, is perfecting arrangements for the operation of a mill for the production of hosiery. J. K. Voehringer, 7226 Castor Road, Philadelphia, is treasurer and representative.

The Sohn Hosiery Co., New York, N. Y., has been organized with a capital of $150,000, to operate a local knitting mill. Work will begin at an early date. The company is headed by S. Sohn, 1140 Broadway, New York.

Gates, Mills & Driscoll, Inc., Johnstown, N. Y., recently chartered with a capital of $200,000, will operate a knitting mill for the production of mittens and kindred specialties. Henry P. Gates, Johnstown, is one of the principal incorporators and represents the company.

Herbert B. Newton & Co., Philadelphia, Pa., recently formed with a capital of $200,000, have plans for the operation of a local knitting mill. H. L. Newton, 1519 Lindley Avenue, is treasurer and representative.

The Victory Knitting Mills, Providence, R. I., recently organized, will operate a local plant at 208 Union Street. The company is headed by Robert R. Fogelson, Providence.

The Shaughnessy Knitting Co., Watertown, N. Y., has taken out a permit for the erection of a new one-story addition, 40x50 feet, to be equipped as a power house. Thomas Phillips, 228 Arsenal Street, Watertown, is architect. Work will be placed in progress at once.

The Crotex Knitting Mills, Inc., Brooklyn, N. Y., recently formed with a capital of $7,000, plans the early operation of a local plant for the production of knit goods specialties. The company is headed by N. and L. Natter, and P. Smith.

The DeLuxe Silk Hosiery Corporation, Buffalo, N. Y., lately formed with a capital of $20,000, will operate a local knitting mill, for which arrangements will be consummated at an early date. The company is headed by J. M. Black, J. Swart and C. Pond.

New Machine for Hosiery Dyeing.

The Klauder-Weldon Dyeing Machine Company of Bethayres, Penna., has recently secured patents on a machine designed to greatly simplify and improve hosiery dyeing. While the new machine is built for all grades and conditions of hosiery dyeing, it is especially suited for dyeing silk or light-weight sheer hosiery now in vogue. A special feature is the cylinder, constructed of monel metal, so built as to avoid the exposure of rough edges of sheets, cast metal surfaces or bolt or rivet heads. The perforating is so planned that the goods will not come in contact with perforated section at any time in the revolution of the cylinder. The use of nets is entirely dispensed with, and the control of the mechanical action of the operation on the fabric is placed entirely in the hands of the dyer. He can, by raising or lowering the liquor level, assure himself of quality work by increasing or decreasing the mechanical action necessary.

The 1925 edition of the Official American Textile Directory has just been published.

Part I contains detailed reports on the textile mills throughout the United States, Canada and Mexico.

Part II is a complete listing of raw material concerns, including dealers and brokers in cotton, wool, silk, waste, rags, flocks, etc.

Part III is the yarn trade index.

Part IV is a classified listing of mills doing work for the trade such as dyeing, bleaching, finishing, mercerizing, scouring, carbonizing, spinning, winding, weaving, knitting, etc.

Part V is a classified listing of manufacturers of many kinds of cloth, arranged according to goods produced.

Part VI lists selling agents and commission houses, export houses and cotton goods brokers with kinds of goods handled.

The directory is published by the Bragdon, Lord and Nagle Co., 234 Fourth Avenue, New York. Office edition $4.00. Travelers edition $3.00.